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WORKING PLAN

FOR

THE CHINGLEPUT FOREST DIVISION

1949-50 TO 1963-64

BY

SRI P. VENKATARAMANY, I.F.S.

Deputy Conservator of Forests

Under the direction of the Conservator of Forests
Working Plans Circle

PRINTED BY THE SUPERINTENDENT
GOVERNMENT PRESS
MADRAS
1954

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INTRODUCTION.

This is the first working plan for the Chingleput Forest Division to be prepared in the Working Plans Circle, after the formation of the Division on 16th July 1948.

The Chingleput Working Plan Division, assembled at Chingleput on the 12th June 1947, with Sri P. Venkataramany, I.F.S., Deputy Conservator, as Working Plan Officer. He was on leave for one month from 30th September to 29th October 1947, during which period the District Forest Officer, Chingleput, held additional charge of the division.

The headquarters of the division was shifted to Madras with effect from 25th June 1947. The staff employed in the division consisted one lower division clerk, two Rangers and two Foresters.

Field work was begun in June 1947 and completed in September 1948.

As the forests of the division are distributed in Chingleput and South Arcot Revenue districts, the Chapters of Part II of the working plan except for Establishment and Labour and Financial Forecast have been written separately for each of the revenue districts, with a view to facilitate reference tothe prescriptions by the Collectors concerned to get a clearer idea of the working of the forests in their respective districts.

CUDDAPAH,
17*th December* 1948.

P. VENKATARAMANY,
Working Plan Officer, Chingleput Division.

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WORKING PLAN FOR CHINGLEPUT FOREST DIVISION.

PART I.

Summary of facts on which proposals are based.

CHAPTER I.—THE TRACT DEALT WITH.

SECTION 1.—NAME AND SITUATION.

1. This working plan deals with the whole of Chingleput Forest Division as it at present constituted, and will be known as the Chingleput Working Plan. The division comprises of the Chingleput district excluding Ponneri and Tiruvallur taluks, and the South Arcot Revenue district excluding Kallakurichi taluk. It lies between north latitudes 11° 10′ and 13° 47′ and east longitude 78° 55′ and 80° 21′. This division was newly created with effect from 16th July 1947, and its boundaries were notified in G.O. Ms. No. 2292, Development, dated 13th June 1945, copy of which will be found in Appendix I. It consists of five ranges, Chingleput, Tirupporur, Sriperumbudur, Markanam and Tirukkoyilur.

2. *Area.*—The division comprises of 61,436 acres (96 square miles) of reserved forests, 360 acres of reserved lands and 5,010 acres of unreserved lands. This excludes 10 reserved forests of 6,179 acres (10 square miles) under panchayat management in Chingleput district (excluding Ponneri and Tiruvallur taluks) and 36 reserved forests of 95,808 acres (150 square miles) under panchayat management in South Arcot district (excluding Kallakurichi taluk). Lists of the panchayat forests will be found in Appendix II.

The transfer of the remaining reserved forests, now under panchayat management in the Chingleput and South Arcot districts, to the Forest Department is under consideration by Government. Pending Government orders on the transfer, it is considered desirable to include these panchayat forests also within the scope of this working plan, so that the prescriptions for their management may be made applicable to them from the date of assumption of management by the Forest Department.

3. *Etymology of the name.*—The name Chingleput is an anglicised distortion of the original name Sengalunirpattu (or water-lilly-brook) which reveals that in the days long gone by, the district abounded in numerous streams with perennial water.

SECTION 2.—CONFIGURATION OF THE GROUND.

4. The division lies on the east coast of the Madras Presidency, south of Madras. It is, for the most part, plain sloping ground very gently to the sea on the east. The only hills in it, are the group of rocky heights which lie to the south-west of Gingee and may be called the Gingee Hills and the low ridged or conical hills of scrub jungle forests scattered all over the rest of the division. These run up to an elevation of 600 feet above sea level.

SECTION 3.—GEOLOGY, ROCK AND SOIL.

5. Geologically, the country is of some interest. The Archæan, gneissic and plutonic rocks are to be seen emerging from beneath the younger sedimentaries in the south-west and southern parts of it. They include the typical examples of the charnockite series as developed at St. Thomas Mount and Pallavaram.

6. Super imposed on the gneisses, comes a very thin layer of low level conglomeratic laterite from 10 inches to 12 inches thick, together with laterite, red sands and loams. These occur in patches and are the remains of an once continuous horizontal formation, probably of marine origin and cut through by recent river alluvium. Alluvial areas in the riverbeds and along the coast, together with blown sand, complete the list of surface deposits.

7. *Soil.*—The various types of soil met with and their distribution among the various reserved forests, reserved lands and unreserved lands are as follows :—

(i) Red loam, typical of the inland scrub forests of Chingleput and South Arcot districts.

(ii) Sandy soil with good admixture of silt—like Maiyur reserved land, Markanam and Agaram reserved forests.

(iii) Sandy soil in the coast with poor admixture of silt—like Nemeli, Vadapatnam, Kodapatnam unreserves and Kunnimedu, Pudupet, Settikuppam, Ariyakoshti and Porto-Novo unreserved lands.

(iv) Fine clay and silt subject to tidal inundation, e.g., parts of Pichavaram and Kille reserved forests.

(v) Pure infertile sand—as in the Malattar river bed areas of Edayar, Gramam, Tiruvannainallur, Iruvelpatti and Tiruthoraiyur.

8. *Red loam soils.*—This is the typical soil of the Chingleput and South Arcot districts and ranges in depth from six inches to four feet. It is generally deep in the plains portion of the reserves being shallow, with gravelly or rocky out crops in the hilly portions. Below the soil stratum there is generally an inpenetrable stratum of hard rock. From wells dug in plantations, it is seen that water is found at a depth of about 15 feet to 20 feet below ground level. As there is always an impenetrable layer of hard rock between the ground level and sub-soil water level, there is absolutely no capillary attraction of moisture by the roots of plants from the sub-soil water level. The depth of sub-soil water level is of interest only to the extent that wells have to be dug if watering casuarina plantations immediately after planting is thought of.

The soil is lacking in humus but has a fair capacity for retaining moisture. In patta lands, adjoining the reserves, were the fields are ploughed repeatedly for agricultural operations, the rain water is absorbed into the soil and even though the surface soil to a depth of three inches to six inches may dry up during spells of hot weather, the sub-soil always contains a good supply of moisture for the growth of plants.

Excluding rocky hill slopes and regions of shallow soil, the other areas with deep soil (depth of soil, three feet and over) seem suited for growing casuarina. In the fields adjoining the reserved forests, extensive casuarina plantation have been raised by private individuals successfully.

9. *Sandy soil with good admixture of silt.*—This type of soil occurs in Maiyur reserved land, Markanam and Agaram reserved forests. The level of water as seen from soil profile in wells is six feet to twelve feet below ground level. The soil has good water holding capacity. As the soil is homogenous from ground level, plant growth can draw on the sub-soil moisture by capillary attraction during drought. This type of soil seems well suited for growing casuarina. In such localities, casuarina attains a height of ten feet at the end of the first year and a height of fifteen feet and a girth of six inches by the end of the second year, when the side branches interlace and the plantation becomes ripe for pruning of lower branches in the third year.

10. *Sandy soil in the coast with poor admixture of silt.*—This type of soil occurs in the unreserved lands adjoining the coast. Here, the soil consists of pure sand. There is little or no admixture of silt ; hence the soil has no capacity to hold water. Water is found in wells at a depth of about fifteen feet. Here, casuarina seems to come up well in the first year, when the plants are regularly watered. In the second year, the plants do not seem to thrive well.

11. *Fine clay and silt subject to tidal inundation.*—This type of soil is typical of the mangrove forest of Kille and Pichavaram reserved forests. In this kind of soil, different types of mangrove forest are found according to the degree of inundation. Portions of these reserved forests, which are above the level of tidal action, contain sandy soil with poor admixture of silt.

12. *Pure infertile coarse sand.*—The waste lands in the Malattar river bed in the Tirukkoyilur range consists of infertile coarse sand. There is no admixture of clay or silt ; hence, the soil has no capacity for retaining moisture. The sub-soil water is about 15 feet below ground level. This soil is not fit for regeneration. Even though casuarina seems to do well in the first year, when watering is done, the plants dry off subsequently. Though extensive areas were planted with casuarina and *prosopis juliflora* during 1945–46 and 1946–47, with the exception of about five acres in Edayar 1945–46 plantation and five acres in Tiruthoraiyur 1945–46 plantation, the remaining plantations may have to be considered as failures.

SECTION 4.—CLIMATE AND RAINFALL.

13. *Climate.*—The climate is temperate. It resembles the climate obtaining in other coastal districts, in presenting no extremes of heat and cold. The mean annual temperature is 82°, the average maximum and the average minimum being 90° and 74° respectively. As in other districts along the south-east coast of the Province, the heat in the hot weather is never very severe ; on the other hand, the coolness in the cold season is very slight.

May, June and July are the hottest months, the temperature reaching up to about 100°. The inland parts of the division, which receive less rain than the coast and do not get the evening breeze from the sea, are hotter than the portions nearer the Bay of Bengal.

The country close to the sea is humid. On the whole, the division is healthy, except that diseases such as leprosy and elephantiasis are prevalent in places along the coast.

14. *Rainfall.*—Statistics of rainfall as recorded at the various rain-gauge stations in the division and for the division as a whole, are given below for the dry weather (January to March), the hot weather (April to May), the south-west monsoon weather (June to September), the north-east monsoon weather (October to December) and also for the whole year.

—	*Year recorded.*		*January to March.*	*April to May.*	*June to September.*	*October to December.*	*Total for whole year.*	
	From	*To*						
				Coastal Stations.				
Saidapet	1870	1930	2·19	1·88	15·95	32·82	52·85	Average for coastal stations 53·0.
Covelong	1870	1903	2·09	1·53	16·55	31·34	52·41	
Markanam	1881	1903	1·00	1·79	17·51	30·10	50·40	
Porto Novo	1898	1903	2·57	2·72	10·54	40·47	56·30	
				Central Stations.				
Chingleput	1870	1930	1·63	2·03	18·06	25·66	47·38	Average for Central stations 45·11.
Madurantakam ..	1870	1930	1·60	2·48	18·04	24·32	46·44	
Tindivanam ..	1870	1903	1·20	3·04	18·53	21·89	44·75	
Villupuram	1870	1903	1·20	1·20	17·22	20·71	41·86	
				Inland Stations.				
Sriperumbudur ..	1870	1930	1·61	1·82	16·22	22·86	42·51	Average 41·09.
Tiruvallur	1870	1930	2·03	1·11	17·08	21·28	41·50	
Gingee	1881	1903	0·94	2·92	18·53	18·19	40·60	
Tirukkoyilur ..	1870	1930	1·04	3·17	18·96	16·96	39·77	
Average for the whole division.	..	..	1·67	2·27	16·90	25·55	46·39	

It will be seen that the average rainfall for the division is about 46 inches. The total annual rainfall ranged from 25·16 inches in 1876, the year of great famine, to a maximum of 71·86 inches in 1884, the year of the heaviest floods.

15. It will be noticed that the rain at rain-gauge stations on or near the coast (53·0) is heavier than that in the places more centrally situated (45·11 inches) ; this latter is again higher than the rainfall in the westernmost parts (41·09). The reason for this is that over half of the total annual rainfall (25 out of 46 inches) is brought from the direction of the sea by the north-east monsoon ; this current, therefore, parts with most of its moisture in the coastal taluks, which reaches first and has less moisture left for the central and inland parts. The south-west monsoon, which brings the remaining rainfall (17 inches) is, on the other hand, slightly heavier in the inland taluks which it reaches first, than in the central or coastal parts of the division.

Except during these two monsoons, the rainfall is very light. In the first three months of the year, the fall is only about 1½ inches ; in April and May, the average amount received is about 2 inches.

16. The rain usually comes in heavy showers. If the amount of rainfall at the coastal, central and western rain-gauge stations is divided by the number of rainy days in each of these groups, the average amount of rain falling in them would be 0·95 inch, 0·86 inch and 0·77 inch respectively.

17. *Statement of rainfall.*—The following statement shows the average, the maximum and the minimum rainfall, which has occurred in the division during the period from 1870 to 1930. The rain-gauge stations considered are all Revenue Department rain-gauge stations and the figures are abstracted from *Madras District Gazetteer*, Chingleput district, Volume III, and Register of rainfall statistics maintained in the Chingleput Collector's Office :

Names of rain-guage stations.	*Months.*												
	1	2	3	4	5	6	7	8	9	10	11	12	**Total.**
1 Chingleput—													
1876 minimum	..	..	..	0·60	0·75	3·35	6·67	2·55	1·60	0·45	4·20	..	20·17
1884 maximum	0·60	..	..	..	1·00	0·10	0·75	8·25	4·95	17·92	30·40	14·90	78·87
Average from 1870 to 1930	1·04	0·39	0·20	0·51	1·52	2·41	3·95	5·81	5·89	9·53	11·43	4·70	47·38
2 Covelong—													
1904 minimum	2·10	..	..	..	0·64	0·66	6·52	2·74	1·71	6·49	0·06	4·14	25·06
1903 maximum	3·15	1·33	..	..	4·77	2·38	8·19	5·23	10·68	10·33	15·12	17·66	79·02
Average from 1870 to 1930	3·09	0·65	0·25	0·49	1·04	1·52	3·07	5·82	5·54	12·25	13·89	5·20	52·41
3 Madurantakam—													
1904 minimum	0·19	..	..	..	0·93	..	7·26	2·49	3·23	5·42	1·79	3·15	24·46
1884 maximum	0·70	..	..	0·17	1·90	0·14	1·44	9·97	4·24	11·99	32·72	18·30	81·57
Average from 1870 to 1930	11·04	0·32	0·24	0·45	2·03	2·06	3·82	5·75	6·41	7·51	11·71	5·10	46·44
4 Saidapet—													
1876 minimum	..	..	..	0·80	1·00	2·10	3·15	3·40	3·25	1·00	3·65	..	18·35
1903 maximum	2·73	1·05	..	..	5 35	1·91	3·73	7·80	10·71	9·88	19·18	19·17	82·81
Average from 1870 to 1930	1·52	0·36	..	0·43	1·46	1·89	3·70	4·82	5·54	12·10	14·55	6·17	52·85
5 Sriperumbudur—													
1900 minimum	..	..	..	1·54	0·28	1·57	5·58	0·92	3·33	7·87	3·46	2·10	26·65
1903 maximum	0·19	..	..	..	7·03	2·19	6·66	5·04	8·29	6·87	14·88	20·54	72·89
Average from 1870 to 1930	1·19	0·28	0·14	0·44	1·38	1·98	3·68	4·96	5·60	8·27	10·27	4·32	42·51
6 Tiruvallur—													
1876 minimum	..	..	..	0·60	0·50	3·40	2·85	3·15	0·45	0·40	1·97	..	13·32
1898 maximum	..	..	..	..	0·96	3·81	5·59	5·26	10·52	18·49	21·84	10·80	72·27
Average from 1870 to 1930	1·23	0·49	0·31	0·43	1·68	2·17	3·56	5·00	5·35	8·02	9·82	3·44	41·50
7 Markanam—													
Average from 1881 to 1930	1·39	0·45	0·30	0·61	0·91	1·41	3·01	5·87	5·92	10·26	14·40	5·79	50·42
8 Porto Novo—													
Average from 1889 to 1930	2·23	0·93	0·39	0·83	1·22	1·25	3·04	4·32	6·10	12·67	16·17	7·79	56·94
9 Tindivanam—													
Average from 1870 to 1930	1·19	0·5	0·33	0·75	1·94	1·87	3·41	5·98	6·64	8·39	9·65	4·12	44·81
10 Villupuram—													
Average from 1870 to 1930	1·23	0·40	0·25	0·80	1·90	1·98	3·10	5·82	6·24	8·76	8·51	4·24	43·23
11 Gingee—													
Average from 1880 to 1930	1·26	0·40	0·40	0·84	2·01	2·06	3·17	6·00	6·92	7·38	7·69	3·45	41·58
12 Tirukkoyilur—													
Average from 1870 to 1930	0·98	0·48	0·27	0·72	2·37	2·19	3·44	5·51	6·88	7·49	6·89	2·93	40·15

NOTE.—Maximum and minimum figures are not available for the rain-gauge stations in items 7 to 12.

SECTION 5.—WATER-SUPPLY.

18. The river system in the division is simple ; the whole of it drains into the Bay of Bengal by a series of rivers, which flow almost in parallel courses. The chief of the rivers flowing from north to south are the Korttaliyar, the Palar, the Gingee river, the Ponnaiar, the Vellar and the Coleroon. The longest of these rivers is the Palar, which rises in the Mysore State, flows through North Arcot district, enters Chingleput district, west of Conjeevaram and after running right across the district in south-easterly direction, falls into the sea, three miles to the south of Madras.

19. The Korttaliyar flows from the surplus weir of the great tank at Kaveripakkam in North Arcot district, similarly traverses Chingleput district, west to east and falls into the back waters at Ennore.

The Gingee river, also known as Varahanadhi (boar river) rises in the extreme north-west corner of the Tindivanam taluk, passes near Gingee, whence its name, and flows into the Bay by two mouths near Pondicherry.

The Ponnaiar rises in Mysore State in the Chennakesava Hill, east of the Nandidurg. After traversing through Salem and North Arcot districts, it enters South Arcot district near the southern end of Tirukkoyilur taluk. Thence it flows east and falls into the Bay of Bengal, about 4 miles north of Cuddalore Old Town. The water in this river is affected less by the rain, which falls locally than by that falls as its source in Mysore, and it comes in down in short floods, which rapidly dry-up again. During high floods, the river spills into the Malattar.

The Vellar is formed by the junction of two rivers the Vasishtanadhi and the Sweta Nadhi, which rise in Salem district. The river flows through Vriddachalam and Chidambaram taluks to join the Bay of Bengal, south of Porto Novo.

The Coleroon separates itself from the Cauvery at the head of the Island of Srirangam. It flows into the Bay of Bengal, about six miles south of Porto Novo.

20. Back waters or lagoons are formed all along the coast to the antagonism of the sand-laden currents of the Bay and the languid waters of the rivers, endeavouring to find an outlet into the sea. These backwaters are connected together and form the Buckingham Canal, which allows navigation by country craft between Madras and Markanam.

21. There are no important sources of water-supply within the reserved forests. Adjoining the reserved forests, which form their catchment areas, there are a number of tanks scattered round the reserves. These rainfed tanks contain water for about six months in the year, from July to December and they serve to irrigate paddy fields to some extent. The cattle, which resort to the reserved forests for grazing, depend upon these tanks for water.

SECTION 6.—DISTRIBUTION AND AREA.

22. The Working plan deals with the reserved forests and unreserved areas, in Chingleput forest division. Portions of Athipakkam reserved forest, though lying within the North Arcot district, are included within the notified limits of the Chingleput Forest Division.

23. The following statement furnishes the names of the reserved forests and unreserved lands of the division under departmental control : Statements of reserved forests under the management of the panchayats will be found in Appendix II :--

Range.	*Name of reserved forest.*	*Area in acres.*	*Total area of each range.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)
	CHINGLEPUT DISTRICT.			
	Chingleput taluk.			
Chingleput ..	1 Gudalur	2,200	..	Transferred to the control of Forest department in G.O. No. 2292, Development, dated 13th June 1945.
	Do. Extension I	29	..	
	Do. Extension II ..	98	..	
	2 Senkundram	885	..	
	Do. Extension I ..	352	..	
	Do. Extension II ..	58	..	
	3 Thirutheri	243	..	
	Do. Extension I ..	458	..	
	Do. Extension II ..	150	..	

Range. (1)	*Name of the reserved forest.* (2)	*Area in acres.* (3)	*Total area of each range.* (4)	*Remarks.* (5)
	CHINGLEPUT DISTRICT—*cont.*			
	Chinglept taluk—cont.			
Chingleput—*cont.*	4 Hanumanthaputheri	311	..	
	Hanumanthaputheri Extension I.	146	..	
	Hanumanthaputheri Extension II.	114	..	
	5 Paranur	383	..	
	Do. Extension I	160	..	
	Do. Extension II ..	94	..	
	6 Tirumani	632	..	Transferred to the control of the Forest department in G.O. No. 4014, Development, dated 24th October 1946.
	Do. Extension II ..	121	..	
	7 Nemali	716	..	
	Do. Extension I ..	263	..	
	Do. Extension II ..	312	..	
	8 Vallam	1,456	..	
	Do. Extension I	142	..	
	Do. Extension II	129	..	
	9 Anjur	1,449	..	Transferred to the control of the Forest department in G.O. No. 884, Development, dated 24th February 1948.
	Do. Extension I	178	..	
	Madurantakam taluk.			
	10 Kattugudalur	2,092	..	
	Do. Extension I ..	342	..	
	11 Gudalur A	903	..	
	12 Gudalur B	386	..	
	13 Rajapalayam	398	..	
	14 Koilyalam	839	..	
	15 Valluvapakkam	612	..	
	Kancheepuram taluk.			
	16 Idaimichchi	847	..	
	17 Kavanipakkam	708	..	
	18 Marudam	1,125	..	
	19 Perungoli	696	..	
	Do. Extension I ..	6	..	
	Do. Extension II ..	10	..	
		20,043	..	
	Chingleput taluk.			
Tiruporur ..	20 Illalur	688	..	Transferred to the control of the Forest department in G.O. No. 2292, Development, dated 13th June 1945.
	Do. Extension	178	..	
	21 Thaiyur	1,515	..	
	22 Kayar	627	..	
	Do. Extension I	482	..	
	23 Mambakkam	761	..	
	Do. Extension I ..	517	..	
	24 Madayathur	749	..	
	Do. Extension I ..	141	..	
	Do. Extension II ..	98	..	
	25 Sonalur	1,117	..	
	Do. Extension I ..	47	..	
	Do. Extension II ..	201	..	
	26 Alathur	491	..	
	Do. Extension I ..	213	..	
	27 Kattur and Extension ..	3,394	..	Transferred to the control of the Forest department in G.O. No. 4014, Development, dated 24th October 1946.
	28 Tirukkalikundram and Extensions.	2,251	..	
	29 Oragadam	564	..	
	Do. Extension I ..	142	..	
	Do. Extension II ..	301	..	
	Do. Extension IV ..	17	..	

Range. (1)	Name of the reserved forest. (2)	Area in arres. (3)	Total area of each range. (4)	Remarks. (5)
	CHINGLEPUT DISTRICT—*cont.* *Chingleput taluk*—cont.			
Tiruporur—*cont.*	30 Kolathur	1,795	..	Transferred to the contro of the Forest department in G.O. No. 2292, Development, dated 13th June 1945.
	Do. Extension I	45	..	
	Do. Extension II	6	..	
	Do. Extension III	20	..	
	31 Salur	940	..	Transferred to the control of the Forest department in G.O. No. 4014, Development, dated 24th October 1946.
	Do. Extension I	9	..	
	32 Kalvoy	72	..	
	33 Sirukundram A	841	..	Transferred to the control of the Forest department in G.O. No. 2292, Development, dated 13th June 1945.
	Do. Extension I	208	..	
	34 Sirukundram B	354	..	
	Do. Extension I	87		
	35 Navalur	282	..	Though not mentioned in the Government Order, transferred along with item 28 above.
		19,153	..	
	Sriperumbudur taluk.			
Sriperumbudur ..	36 Mannur	553	..	Transferred to the control of the Forest department in G.O. No. 2292, Development, dated 13th June 1945.
	37 Vadakkupattu	710	..	
	Vattampakkam Extension	100	..	
	38 Vattambakkam	714	..	
	39 Kavanur	515	..	
	Saidapet taluk.			
	40 Nanmangalam	359	..	
	Do. Extension I	117	..	
	Do. Extension II	200	..	
	41 Maduraipakkam	451	..	
	Chingleput taluk.			
	42 Kattankolathur	568	..	Transferred to the control of the Forest department in G.O. No. 884, Development, dated 24th January 1948.
	Do. Extension I.	163	..	
	43 Kumili	668	..	
	Do. Extension I	538	..	
	44 Vandalur	2,875	..	Transferred to the control of the Forest department in G.O. No. 2292, Development, dated 13th June 1945.
	Do. Extension	79	..	
	Sriperumbudur taluk.			
	45 Maganiem	955	..	Transferred to the control of the Forest department in G.O. No. 884, Development, dated 24th February 1948.
	46 Nallur	903	..	
	47 Erumaiyur	170	..	
	48 Siruvanjur	504	..	
	Chingleput taluk.			
	49 Unamancheri	759	..	Transferred to the control of the Forest department in G.O. No. 4014, Development, dated 24th October 1946.
		11,901	..	

Range.	*Name of the reserved forest.*	*Area in acres.*	*Total area of each range.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)
	SOUTH ARCOT DISTRICT.			
	Tindivanam taluk.			
Markanam ..	50 Markanam	80	..	Transferred to the control of the Forest department in G.O. No. 2292, Development, dated 13th June 1945.
	51 Agaram	600	..	
	52 Kurumbaram	603	..	
	53 Kumalampattu	1,201	..	
	Chidambaram taluk.			
	54 Pichavaram	2,489	..	
	Do. Extension ..	228	..	
	55 Kille	638	..	
		5,839		
	Tirukkoyilur taluk.			
Tirukkoyilur ..	56 Athipakkam South	2,827	..	Transferred to the control of the Forest department in G.O. No. 4257, Development, dated 30th October 1945.
	NORTH ARCOT DISTRICT.			
	Tiruvannamalai taluk.			
Tirukkoyilur ..	57 Athipakkam North	1,673	..	Transferred to the control of the Forest department in G.O. No. 1867, Development, dated 11th May 1945.
		2827 4500		
		4,500	..	
	CHINGLEPUT DISTRICT.			
	Madurantakam taluk.			
	Reserved land.			
Chingleput ..	Meiyur	360	.. ..	Transferred to the control of the Forest department in G.O. No. 2292, Development, dated 13th June 1945.
		360	..	
	Unreserved lands.			
Chingleput ..	1 Vadapatnam	81	..	Transferred to the control of the Forest department in G.O. No. 2292, Development, dated 13th June 1945.
	2 Kodapatnam	37	..	Though this is not mentioned in the above Government Order, transferred along with item 1 above.
		118	..	
	Chingleput taluk.			
Tirupporur ..	3 Nemali	80	..	G.O. No. 2292, Development, dated 13th June 1945.
		80	..	
	SOUTH ARCOT DISTRICT.			
	Tindivanam taluk.			
Markanam ..	4 Kunnimedu	295	.. ..	G.O. No. 2292, Development, dated 13th June 1945.
	5 Pudupet	308	..	
	6 Settikuppam	140	..	
	7 Killiyanur	560	..	
	Chidambaram taluk.			
	8 Porto Novo	146	..	
	9 Ariyakoshti	196	..	
		1,645	..	

Range. (1)	*Name of the reserved forest.* (2)	*Area in acres.* (3)	*Total area of each range.* (4)	*Remarks.* (5)
	South Arcot District—*cont.*			
	Tirukkoyilur taluk.			
	Waste lands.			
Tirukkoyilur ..	1 Tiruvannainallur	522	..	G.O. No. 3361, Development, dated 2nd September 1946.
	2 Gramam	602	..	
	3 Iruvelpattur	637	..	
	4 Edayar	904	..	
	Cuddalore taluk.			
Tirukkoyilur ..	5 Thiruthoraiyur ..	502	..	
		3,167	..	

The following statement furnishes the total areas of the reserved forests, reserved lands and unreserved lands in each range :—

Name of range.	*Reserved forests.*	*Reserved lands.*	*Unreserved lands and waste lands.*	*Total area for each range.*
	ACS.	ACS.	ACS.	ACS.
Chingleput	20,043	360	118	20,521
Tiruporur	19,153	..	80	19,233
Sriperumbudur	11,901	..	..	11,901
Markanam	5,839	..	1,645	7,484
Tirukkoyilur	4,500	..	3,167	7,667
Total for the division ..	61,436	360	5,010	66,806

SECTION 7.—STATE OF BOUNDARIES.

24. All the reserved forests have been permanently demarcated by means of granite slab cairns and cleared lines, six feet to twelve feet wide, between the cairns. During the period when the reserved forests were under Panchayat management between the years 1923 and 1945, the maintenance of the boundaries and cairns was not satisfactorily done, with the result that cairns are either missing or have fallen down in several places and the boundary lines have become generally overgrown. It is essential that these defects are rectified by the territorial staff as quickly as practicable.

SECTION 8.—LEGAL POSITION.

25. All the reserved forests dealt with in this working plan have been declared as reserved forests under section 16 of the Madras Forest Act of 1882. They are, therefore, the absolute property of the State subject to certain specified public rights and concessions. As regards the reserved lands and unreserved lands which have been taken over for planting with casuarina, they also should be reserved under the Madras Forest Act, as early as possible, as it is desirable that these areas should be placed permanently under the Forest Department.

SECTION 9.—RIGHTS AND CONCESSIONS.

26. *Rights and concessions.*—The rights-of-way as admitted at Forest Settlement have been recorded in the notification under section 16 of the Madras Forest Act, constituting the reserves.

CHAPTER II.—THE FOREST.

SECTION 1.—COMPOSITION AND CONDITION OF THE CROP.

27. The type of forests met with in the Chingleput Forest Division can be broadly divided into the following categories :—

(i) Inland deciduous forests.

(ii) Coastal mangrove forests.

28. The inland deciduous forests of the division consist of (*a*) thorny scrub and (*b*) evergreen scrub (Memecylon type). The thorny scrub is made up of mixed deciduous species of poor height, growth, small girth, poor density and open canopy and hardly fit for fuel or timber, though in the days long past they might have been fit for exploitation. The presence of this type of forests confined to the fringe forests in proximity to villages indicate a set-back from a superior deciduous type to an inferior thorny scrub brought about by many years of maladministration, when indiscriminate hacking of trees by man and overgrazing by cattle took place without check. Parts of this type are on good soil where-by artificial regeneration, the present growth could be improved.

29. *The evergreen scrub* (*Memecylon type*).—This type is recognized by its evergreen appearance, low height, sometimes with an upper storey of inferior deciduous species. The species commonly met with in this type of forests are—

(1) *Memecylon edule.*
(2) *Albizzia amara.*
(3) *Eugenia jambolana.*
(4) *Maba buxifolia.*
(5) *Carissa spinarum.*

30. *The Coastal mangrove forests* are tropical tidal forests which differ widely from the inland scrub forests. The bed of these forest is so low that it is subject to inundation with brackish water for varying periods during the course of the year. These regions can be grouped into four classes based upon the degree of inundation they are subjected to—

(i) The regions under water during the ordinary and the spring high tide, but exposed during low tide.

(ii) The region above the level of spring with high tide and inundated occasionally during periods of equi-noctical high tide.

(iii) The region above the level of high or low tides, but soil of which is saline due to occasional inundations.

(iv) The region beyond inundation and the soil of which is not saline.

31. In region (i), *Avicennia officinalis* occurs gregariously in association with a mixture of *Avicennia marina*, *Rhizophora mucronata*, *Aegiceras*, *Corniculatum* and *Brugeria conjugata.* The *Rhizophora mucronata* is prominent and occurs abundantly along the sides of the creeks. *Sonneratia apitala* is also found in these localities. The forests are evergreen and the trees reach a girth of about 15 inches at breast height in about 30 years. They do not coppice, but natural regeneration from seed is plentiful.

32. In region (ii), the true mangrove have disappeared and its place is taken by *Excoecoria agallocha* (தில்லை) plant with milky juice, which blisters the skin. Here, the ground is about one to two feet higher than the true mangrove forest and periods of tidal influence are few and far between.

33. In region (iii), owing to the still further elevation of the ground level, the mangrove forest has completely disappeared; but owing to the salinity in the soil, other species common in upland forests have not come in. In such areas are seen only *Sueda martima* (உம்றி). During the World War I, this plant was collected for dye product, but it is not collected now.

34. In region (iv), the soil is above the level of the tides and, owing to the action of the rain water, the salinity of the soil has been leached away. Here, small shrubs as *Cassia auriculata* make their appearance and gradually *Acacias* and other junglewood species appear.

Section 2.—Injuries to which the Crop is liable.

35. *Man.*—The scattered nature of the reserved forests, with villages interspersed, affords facilities for the illicit removal of fuel and manure leaves. The people inhabiting the villages do not generally evince forests-sense; the advantages of conservation of forests are not recognized by them. On the other hand, they look upon the forests as no man's property from which they can help themselves to meet their requirements. Until forests consciousness is aroused in the minds of the people and they begin to realize that forests are a national asset, which should be scientifically managed, the protection of the forests from illicit fellings and browsing by goats will be difficult.

36. *Animals.*—The evils of overgrazing in forest areas and of browsing by goats cannot be over-emphasized. Due to uncontrolled grazing and goat-browsing in the past, the forests have been reduced to mere scrub. Incipient erosion has also started in places.

Grass is scarce in the reserved forests. The semi-famished village cattle subsist by browsing leaves of plants. In the villages adjoining the reserved forests, large numbers of goats are kept by the ryots for the purposes of manure and for supplementing their meagre agricultural income. Owing to scarcity of leaf fodder outside the reserved forests, the villagers are prone to let their goats illicitly into the reserved forests to browse and it is necessary for the beat subordinates to be always on the alert to prevent such illicit browsing. The desolate and dreary unreserves adjoining the villages are the standing monuments depicting the results of uncontrolled grazing and browsing by goats.

37. *Fires.*—Owing to the predominance of *Memecylon edule*, *Carissa spinarum* and other evergreen shrubs, there is little inflammable material in the reserved forests and so no fires occurred during the year 1945–46 or 1946–47.

38. *Drought* desiccates soil and, thereby, retards plant growth. During acute droughts, which occur periodically, even trees die outright, particularly in plantations.

39. *Wind.*—The hot winds, which blow from the west during the hot weather before the onset of the south-west monsoon, has a deleterious effect on the growth of casuarina seedlings planted in the previous years.

SECTION 3.—FAUNA.

40. The lack of wild life in the forests of this division is conspicuous. A few jungle fowls and rabbits are the only game. When these degraded forests improve under a period of rest, rehabilitation and afforestation, it is desirable to reintroduce black-buck, spotted deer and jungle fowl in large numbers in selected centres. Once re-established, they will spread naturally.

CHAPTER III.—UTILIZATION OF THE PRODUCE.

SECTION 1.—AGRICULTURAL CUSTOMS AND WANTS OF THE PEOPLE.

41. *Agriculture.*—Agriculture is the chief industry of the people of the division. Wet cultivation is confined to the ayacuts of the rain-fed tanks scattered all over the division. The bulk of the land is under dry cultivation.

42. The principal demands on the forests of the division from the public are—

(i) grazing for cattle.

(ii) fuel for domestic use, and

(iii) manure leaf.

43. *Grazing.*—The grazing by local cattle is catered for by the reserved forests of the division except the areas planted with casuarina in the years 1944 to 1947. The grazing is regulated by the issue of permits.

44. The rate of grazing fee up to 31st October 1948 was 4 annas per cow unit for the reserved forests in Chingleput and South Arcot districts and 8 annas per cow unit for a portion of Athipakkam Reserved Forest lying within the North Arcot district. With effect from 1st November 1948, however, the rates of grazing fee, which were in force prior to the transfer of the reserved forests to the Panchayats, have been reintroduced. These rates will be found in paragraph 191.

45. The following statement shows particulars of cattle licensed for grazing during 1945–46 and 1946–47 :—

Year.	*Cows.*		*Buffaloes.*		*Sheep.*		*Tottal.*	
	Number.	*Grazing revenue.*	*Number.*	*Grazing revenue.*	*Number.*	*Grazing revenue.*	*Cow units.*	*Grazing revenue.*
		RS. A. P.		RS. A. P.		RS. A. P.		RS. A. P.
1945–46 ..	8,406	2,101 8 0	638	319 0 0	6,242	780 4 0	12,803	3,200 12 0
1946–47 ..	10,759	2,689 12 0	1,146	573 0 0	7,757	969 10 0	16,929½	4,232 6 0

After the reserved forests were taken over under departmental control on 16th July 1945, the number of animals licensed and the grazing revenue collected during 1946–47 shows an increase over those of 1945–46.

As the total area of the reserved forests is 48,031 acres, the average incidence of grazing during 1946–47 was about 3 acres per cow unit.

46. At present, there is no free removal of grass by ryots from the reserved forests.

47. *Penning.*—There is no demand for penning of cattle within the reserved forests. As the reserved forests are all small, rarely exceeding a few square miles, every portion of them is easily accessible to village cattle, which can return to the village in the evening after grazing. Besides, there are no perennial water sources inside the reserved forests, which can serve as convenient centres for penning.

48. *Fuel.*—The demand for fuel by local people is met from trees on patta lands, by use of cow-dung cakes and by pilfering fuel from the reserved forests. It is hoped that, when the casuarina plantations and fuel plantations envisaged by this working plan become ripe for felling, the demand for firewood will have become adequately met.

49. *Manure leaf.*—Wet cultivation is being carried on under the ayacut of the several rainfed tanks in the division. The ryots use green manure leaves for their cultivation. The ryots inhabiting the villages adjoining the reserves, particularly in Tiruporur and Chingleput ranges, resort to the reserved forests for their supply of green manure leaves. The season for removal, is from November to March.

The seigniorage rates for removal of green manure leaves from the reserved forests were—

Rs. 1–8–0 per cart-load in Chingleput district.
Rs. 1–4–0 per cart-load in South Arcot district.

By an order of the Government issued during the War years to encourage increased food production, the above rates were halved ; the current rates are—

Re. 0–12–0 per cart-load in Chingleput district.
Re. 0–10–0 per cart-load in South Arcot district.

(*N.B.*—Permits seem to have been wrongly issued in 1946–47 at Rs. 1-8-0 per cart-load in Chingleput district instead of at Re. 0–12–0 per cart-load).

50. The timber accounts maintained in the District Forest Office show the removal of only 51 cart-loads of manure leaves during 1946–47 yielding a revenue of Rs. 72–8–6. Considering the keen demand for manure leaf, it is probable that much larger quantities of manure leaves would have been removed illicitly from the reserved forests. It is essential that suitable arrangements should be made for meeting the keen demand for manure leaf particularly in Chingleput and Tiruporur ranges, by forming a manure leaf working circle, where controlled lopping on a definite felling cycle may be allowed.

SECTION 2.—MARKETS AND MARKETABLE PRODUCE.

51. Madras is the principal external market for the forest produce, primarily fuel, which it is expected to produce on a large scale in the division. Small quantities of fuel, which can be exploited from the existing scrub forests during their conversion into casuarina plantations, can be sold at the near by towns such as Chingleput, Tiruporur, Tirukalikundram, Markanam and Tirukkoyilur.

52. *Requirements.*—The fuel requirements of Madras City are estimated at three lakhs tons per annum and that of charcoal two lakhs tons. The present population of Madras is roughly 12 lakhs and, on the assumption that a family of five members will consume annually about one ton of fuel, the total requirement of the population will be 11 lakhs tons. Not even a fraction of this requirement can the Chingleput division forests in their present condition cater for.

53. The principal marketable products are fuel, manure leaves and minor forest produce. The existing growth in the scrub jungle forests is very poor, the yield of fuel from the coupes to be clear-felled will not be appreciable, generally. Manure leaves are removed by ryots from adjoining villages on payment of the prescribed seigniorage, particularly in Chingleput and Tiruporur ranges.

54. The main items of minor forest produce available are the following :—

(1) Cashewnuts from Agaram Reserved Forest, Kurumbaram Reserved Forest and Meyyur Reserved Land.

(*Note.*—The Agaram Reserved Forest including the cashewnut trees will be clear-felled in 1947–48 for planting with casuarina in 1948.)

(2) Palmyra usufruct in Nanmangalam and Maduraipakkam Reserved Forests.

(3) Sarapappu from Gudalur Reserved Forest.

(4) Broomstick grass and tamarind in Thaiyur, Kayar, Illalur, Alathur and Madayathur Reserved Forests.

(5) White Chinaclay from Kumalampattu Reserved Forest, in Markanam Range leased for 30 years to Mysindia Company, Madras, and Stoneware Pipe Company, Madras.

SECTION 3.—LINES OF EXPORT.

55. *Railway.*—The Madras-Chidambaram metre guage main line, the chord line from Villupuram to Vriddachalam and the branch line from Villupuram to Tirukkoyilur of the South Indian Railway pass through the division. In the future, when it is expected to raise extensive casuarina plantations throughout the division, it is possible to move casuarina fuel without difficulty to the chief consuming market at Madras by rail.

56. *Water transport.*—The Buckingham Canal runs along the eastern edge of the division and will serve for cheap movement of fuel from Tiruporur range to Madras. It is also navigable, from Markanam to Madras, to freight boats up to 12-ton capacity.

57. *Roads.*—The division is well served by a number of first class, second class and village roads in addition to the Grand Southern Trunk Road from Madras to Tiruchirappalli which passes through the heart of this division. There are no forest roads.

SECTION 4.—METHODS OF EXPLOITATION AND THEIR COST.

58. The areas in which casuarina plantations were raised departmentally from 1944 onwards, do not contain any appreciable standing growth, which could be worked for extraction of fuel in commercial quantities. Extraction of fuel for supply to Madras from certain panchayat reserves is now in progress under the supervision of the Range Officer, Tirukkoyilur range. The following statement shows the cost of extraction and transport of fuel from the coupes to Madras :—

Statement showing the cost of production of fuel per ton.

Serial number.	*Item of expenditure.*	*Swamimalai coupe—12 miles from the coupe to the railway station.*	*Odainatham coupe—10 miles from coupe to the railway station.*	*Kuttadi coupe—3 miles from the coupe to the railway station.*	*Adukkam coupe—13 miles from the coupe to the railway station.*	*Gangavaram coupe—15 miles from the coupe to the railway station.*	*Kattumailur coupe—13 miles from the coupe to the railway station.*	*Agaram Reserved Forest (Departmental).*	*Remarks.*
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	
1	Felling, billeting and stacking ..	4 0 0	4 0 0	5 0 0	4 0 0	4 8 0	5 0 0	4 0 0	All these contractors are delivering fuel to Madras City at controlled rates of Rs. 24 per ton.
2	Transporting charges from the coupe to the railway station and wharf.	6 8 0	6 0 0	4 8 0	6 0 0	9 8 0	7 0 0	5 4 0	
3	Railway freight to Madras City ..	6 8 0	6 8 0	6 8 0	6 8 0	6 8 0	7 0 0	8 0 0	
4	Loading charges	0 5 0	0 6 0	1 0 0	1 0 0	0 8 0	0 8 0	0 8 0	
5	Supervision and gumastha charges.	0 8 0	0 8 0	1 0 0	0 8 0	0 4 0	0 8 0	..	
6	Dryage pilferage	0 4 0	0 4 0	0 8 0	0 4 0	0 4 0	0 4 0	..	
7	Seigniorage based on leased amount and estimated yield in the coupe.	4 0 0	6 0 0	2 8 0	7 0 0	4 2 0	4 0 0	1 12 0	
8	Contractor's profit	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	0 8 0	
	Total ..	23 1 0	24 10 0	22 0 0	26 4 0	26 10 0	25 4 0	20 0 0	

59. The regeneration coupe in Agaram Reserved Forest is leased to a contractor on condition that the fuel is supplied to Madras at prescribed rate. In this case, the fuel is transported in carts to Markanam wharf ; thence, it is transported in boats through Buckingham Canal to Madras.

60. The fuel growth in the coupe is clearfelled and billetted into 3 feet long billets and stacked. The stack measures 9 feet × 3 feet. Each stack is treated as one ton.

The rate at which contractors are paid for supply of fuel to Madras has been fixed at Rs. 24 per ton f.o.r., Madras, for the year 1947–48.

SECTION 5.—PAST AND CURRENT PRICES.

61. The past prices of fuel and regeneration coupes and minor forest produce farms obtained in auction sales, are shown in the following statements :—

Name of range.	*Name of area leased out.*	*Area.*	*Amount of revenue.*			*Fee for extraction of time.*	*Yield.*	*Remarks.*
		ACS.	RS.	A.	P.	RS.		
Chingleput	Meyyur Reserved Forest.	310	15,000	0	0	1,320	..	For supply to Madras.
	Paranur Reserved Forest.	25	50	0	0	5	69¾ tons.	
	Sirukundram	50	30	0	0	..	14¼ ,,	
	Sirukundram Block B.	35	6	0	0	2	16½ ,,	
	Gudalur Reserved Forest.	50	14	0	0	15	..	
Sriperumbudur	Kattankolathur	50	15	0	0	5	97 ,,	
	Vattambakkam	10	5	0	0	..	87 C.L.	
	Do.	10	5	0	0	..	..	
	Do.	10	5	0	0	..	17 C.L.	
	Vadakkupattu Block A.	34½	20	0	0	..	46 ,,	
Tiruporur	Nemeli unreserve	65	162	8	0	15	..	
	Alathur Reserved Forest.	50	30	0	0	..	..	Sale cancelled and the sale amount forfeited.
	Madayathur	100	115	0	0	20	..	
Markanam	Markanam Reserved Forest.	98	1,520	0	0	300	551 tons. 52 ,,	Fuel. Charcoal.
	Agaram Reserved Forest Block I.	55	1,820	0	0	245	400 ,, 53 ,,	Fuel. Charcoal.
	Agaram Reserved Forest Block II.	59	1,020	0	0	205	374 ,, 45 ,,	Fuel. Charcoal.
	Kumalampattu	33	55	11	0	40	192 ,,	Fuel.
	Kurumbaram	47	85	3	0	40	29 ,,	Do.
		(27 acres only worked)						
	Kille	56	229	8	0	10	..	
	Kumalampattu	76	147	4	0	30	..	
Tirukkoyilur	Athipakkam Reserved Forest.	50	65	10	0	..	..	
1946–47.								
Markanam	Pichavaram	34	476	0	0	25	..	
	Agaram	96	480	0	0	..		
	Do.	122	610	0	0	..		
	Do.	84	420	0	0	..		
Tirupporur	Kayar Reserved Forest.	100	25	0	0	..	20 C.L.	
	Alathur	25	5	0	0	..	13 ,,	
	Madayathur	50	19	0	0	..	23 ,,	
Tirukkoyilur	Athipakkam	112	205	0	0	..		
Do.	Do.	600	600	0	0	..		
1947–48.								
	Adukkam Panchayat Reserved Forest.	144	3,168	0	0	..	..	For supply to Madras.
	Kattumailur Reserved Forest.	154	770	0	0	..	..	Do.
	Kuttadi Reserved Forest.	128	640	0	0	..	..	Do.
	Ganjanaram Reserved Forest.	182	4,550	0	0	..	..	Do.
	Swamimalai Reserved Forest.	160	1,240	0	0	..	..	Do.
	Udayanatham Reserved Forest.	158	4,819	0	0	..	..	Do.

Name of range.	Name of area leased out.	Area.	Amount of Revenue. RS. A. P.	Fee for extraction of time.	Yield.	Remarks.
			Minor forest produce.			
1945–46.						
Chingleput ..	Meyyur Reserved Forest.	Cashew-nuts.	14 0 0			
	Illalur, Madayathur, Alathur Reserved Forests.	Minor forest produce.	10 0 0			
	Kayar Reserved Forest.	Do.	22 0 0			
1946–47.						
Markanam ..	Agaram Reserved Forest.	Minor forest produce.	77 0 0			
	Karumbaram Reserved Forest.	Do.	26 0 0			
Tirupporur ..	Thaiyur and Kayar Reserved Forests.	Do.	25 0 0			
	Illalur, Alathur and Madayathur Reserved Forests.	Do.	15 0 0			
1947–48.						
Chingleput ..	Gudalur Reserved Forest.	Minor forest produce.	27 0 0			
Sriperumbudur ..	Vattambakkam ..	Do.	8 0 0			
Markanam ..	Agaram	Do.	51 0 0			
	Kurumbaram ..	Do.	66 0 0			
	Kille	Do.	9 0 0			
			30 years white clay-leases.			
Markanam ..	(i) Kumalampattu Reserved Forest.	30 acres.	32 12 0			At Rs. 1–2–0 per acre plus seigniorage fee at Re. 1 per ton from 1st July 1943 to 30th June 1972.
	(ii) Do.	30 acres.	32 12 0			Do.

CHAPTER IV.—ESTABLISHMENT AND LABOUR.

SECTION 1.—ESTABLISHMENT.

62. The following statement shows the strength and disposition of the executive staff and office establishment in the division, which have been sanctioned on a temporary basis :—

Description of staff.	Name of staff.	Rank.	Sanctioned strength.	Actual strength.
Control	District Forest Officer ..	Assistant Conservator or Deputy Conservator.	1	1
Executive	Rangers	Rangers	5	5
Protective	Foresters	Foresters	26	26
	Forest Guards ..	Forest Guards	86	86
	Reserve Watchers ..	Reserve Watchers	41	41
Ministerial	Head Clerk	Head Clerk	1	1
	Accountant	Accountant	1	1
	Draftsman	Draftsman	1	1
	Typist	Typist	1	1
	Forest Office Clerks ..	Lower Division clerks ..	4	4
	Range Office Clerks ..	Do. ..	5	5
Menials	Peons, District Forest Office.	....	4	4
	Peons, District Range Officer.	....	5	5

SECTION 2.—LABOUR.

63. The only work of importance carried on in this division, since its formation on 16th July 1945, has been the artificial regeneration of the scrub jungle forests with casuarina. For this purpose, large number of men coolies for clear-felling the existing growth, digging pits, excavating wells, planting, etc. and of girl or boy coolies for watering the casuarina seedlings have been employed. The labour is recruited from the villages adjoining the planting area and is drawn from the agriculturists class. During the months of September to December, when large number of men and women coolies are required for planting and

watering work, the supply of labour is inadequate, as this season coincides with that of agricultural operations. This circumstance has retarded the planting operations, especially when large areas like 50 acres to 100 acres were taken up for artificial regeneration.

64. In the past years, it was clearly understood that early planting was desirable and every attempt was made to complete planting in August-September. But, owing to shortage of labour, the planting work had dragged on to October-November. In locating the site of the plantations and in determining the extents to be taken up each year, due regard will have to be paid to the availability of labour so as to facilitate early planting.

65. *Wages for labour.*—It will be seen from the following figures that from 1945 there has been a progressive increase in the rate of wages paid to labour employed in the division. The rates have gone up till 1946–47, after which there has been a tendency for wages to get stabilized round about the level reached then.

Year.	*Chingleput range.*			*Thiruporur range.*			*Sriperumbudur range.*			*Markanam range.*			*Thirukoilur range.*		
	M.	*F.*	*B.*	*M.*	*F.*	*B.*	*M.*	*F.*	*B.*	*M.*	*F.*	*B.*	*M.*	*F.*	*B.*
1944–45	..	..	..	12	6	..	..	..	..	..	..	..	..	..	..
1945–46	12	6	4	10	7	5	16	7	5	9	5	4	8	5	4
1946–47	14	7	6	12	6	5	16	7	5	10	5	4	10	5	4
1947–48	12	6	..	12	..	..	14	7	..	6	5	..	8	5	..

M. = Men coolies. F. = Female coolies. B. = Small boy or girl coolies.

66. For arriving at the rate to be paid for various planting operations, the following primary data sheet has been made use of :—

(i) *Planting with seedlings.*—One male coolie can plant 300 seedlings (3 coolies were engaged per acre of 7 feet × 7 feet planting).

(ii) *Watering on the day of planting with one pot of water—(one pot = 2 gallons).*—One female coolie can water 225 plants (4 coolies were engaged per acre of 7 feet × 7 feet planting).

(iii) *Watering after planting with ½ pot of water (i.e., 1 gallon).*—One female coolie can water 450 plants (or two coolies allowed per acre of 7 feet × 7 feet planting).

(iv) *Watering casuarina plants with ¼ pot of water (i.e., ½ gallon).*—One female coolie can water 900 plants (or one coolie required per acre of 900 plants).

(v) *Soil working around surviving plants to a radius of 1½ feet and to a depth of 6 inches to 9 inches.*—One hundred and sixty plants or per 1,000 plants 6 coolies are required.

For the second soil working, one coolie can do about 200 plants.

(vi) *Digging soil and preparation of nursery bed.*—40′ × 3′ × 1¼′ at Rs. 18 per 1,000 c.ft. of earth work—Rs. 2–6–0 per bed.

(vii) *Purchase of straw for covering seeds.*—Re. 0–4–0 per bed of ½ head-load at Re. 0–8–0 per head-load.

(viii) *Watering twice daily.*—With 10 pots of water (i.e., 20 gallons) per bed in the morning and 10 pots of water per bed in the evening. Total 20 pots of water (i.e., 40 gallons) per bed per day. One woman coolie can pour 225 pots of water (i.e., 450 gallons) per day. (*See* item ii). Hence one coolie can water 22·20 = 11 beds per day.

67. Based on the above and on the basis of a wage rate of Re. 0–14–0 per male coolie and Re. 0–7–0 per female coolie, the following rates have been sanctioned by the District Forest Officer for raising plantations in Vandalur and Unamancheri Reserved Forests with an espacement of 6 feet × 6 feet :—

(i) Planting seedlings.—Rs. 3–8–0 per acre of 1,210 plants.

(ii) Watering with one pot of water (i.e., 2 gallons) on day of planting Rs. 2–5–0.

(iii) Watering twice a day with ½ pot of water (i.e., 1 gallon) each twice Rs. 2–5–0 per acre of 1,210 plants.

(iv) Watering with ¼ pot of water (i.e., ½ gallon) per acre of 1,210 plants—Re. 0–10–9.

(v) Soil working around surviving plants—Rs. 5 per acre of 1,210 plants.

(vi) Preparing nursery beds 40 feet × 3 feet—Rs. 2–4–0 per bed.

Tirupporur Range.															
20 Sirukundram A	..	..	..	..	..	51	3,371	66	918	18	..	..	74	2,137	29
Do. B	..	..	..	..	..	..	..	..	..	..	..	..	35	1,293	37
21 Illalur	50	3,211	64	671	13	50	3,823	76	449	9	..	..	75	5,335	71
22 Thaiyur	54	3,133	58	313	5	22	1,740	79	559	25	..	..	43	4,134	83
23 Kayar	49	3,804	78	99	2	..	..	..	..	..	..	..	89	6,434	72
24 Kambakkam	48	3,961	83	113	2	..	..	..	..	..	..	..	82·5	5,582	67
25 Madayathur	..	..	..	..	..	116	7,450	64	505	4	..	..	80	3,187	40
26 Sonalur	..	..	..	..	..	..	..	..	..	..	..	..	76	4,760	63
27 Alathur	..	..	..	..	..	..	..	..	..	..	..	..	23·5	1,739	72
28 Kattur	..	..	..	..	..	..	..	..	..	..	..	..	26	1,346	52
29 Tirukalikundram	..	..	..	..	..	..	..	..	..	..	..	..	28	1,693	60
30 Oragadam	..	..	..	..	..	..	..	..	..	..	..	..	23	1,809	79
31 Nemili Unreserve	..	..	..	..	..	66	2,937	45	1,792	27	..	..	..	..	..
Markanam Range.															
32 Markanam	..	..	..	..	..	55	1,659	30	597	12	..	..	61	2,977	49
33 Agaram	..	..	..	..	..	53	2,044	39	367	7	..	..	70	3,273	47
34 Kurumbaram	..	..	..	..	..	19	1,661	54	981	32	..	..	..	..	..
35 Kumulampattu	..	..	..	..	..	12	..	..	..	..	..	..	36	3,302	92
36 Kille	..	..	..	..	..	48	1,557	21	477	10	..	..	50	2,152	43
37 Pichavaram	..	..	..	..	..	..	..	..	..	..	..	..	35	1,061	30
38 Kunnimedu unreserve	83	4,016	48	1,113	13	55	2,542	46	662	12	..	..	64	2,586	40
39 Pudupet unreserve	100	4,480	45	1,628	16	100	3,865	39	1,015	10	..	..	100	3,737	37
40 Porto-novo unreserve	..	..	..	..	..	80	3,181	40	1,128	14	..	..	31	2,005	65
41 Ariyakoshti unreserve	66	2,743	42	752	11	..	..	..	..	..	..	..	82	3,022	37
42 Settikuppam unreserve	..	..	..	..	..	50	1,821	36	495	10	..	..	..	..	..
43 Kiliyanur	..	..	..	..	..	..	..	..	..	..	..	..	50	2,142	43
Tirukkoyilur Range.															
44 Athipakkam South	..	..	..	..	..	..	..	..	..	..	..	..	100	3,459	35
45 Tiruvannainallur (Malattar Bed).	..	..	..	..	..	41	2,333	57	1,045	26	..	..	97	2,855	29
46 Edayar (Malattar Bed)	..	..	..	..	..	47	2,187	53	940	20	..	..	69	2,447	35
47 Gramam (Malattar Bed)	..	..	..	..	..	47·5	2,445	51	1,051	22	..	..	95·6	2,882	30
48 Thirutheraiyur A (Malattar Bed).	..	..	..	..	..	37	3,859	32	1,781	15	..	..	110	2,733	25
Do. B (Malattar Bed).	..	..	..	..	..	82									
49 Iruvelpattu (Malattar Bed)	..	..	..	..	..	62	3,388	55	1,276	21	..	..	74	2,851	39

Remarks.—The casuarina plantations raised during the years 1944, 1945 and 1946 have generally not been successful except those referred to under section 6, Chapter VIII of Part II. The remaining plantations are to be treated as failures.

SECTION 4.—PAST YIELD.

92. The standing growth in most of the area taken up for clear-felling and artificial planting with casuarina, consisted only of scrub growth, such as *Memecylon edule*, *Carissa spinarum*, *Zizyphus xylopyra*, *Maba buxifolia*, *Atlantia monophylia*. Hence, it was not possible to sell the standing growth to contractors. Only in the cases of Markanam, Agaram, Athipakkam reserved forests and Maiyur reserved land was the standing growth so sufficient as to justify its sale in auction. The following statement furnishes the yield in fuel of the coupes sold in auction as per accounts furnished by the contractors :—

Range.	*Name of coupe.*	*Area.*	*Lease amount.*	*Yield of fuel and charcoal.*	*Yield per acre.*	*Remarks.*
		ACS.	RS.	TONS.	TONS.	
Chingleput ..	Maiyur reserved land (voidah 2nd March to 30th September 1945).	310	15,000	5,000	16	Sold for Rs. 15,000
Markanam ..	Markanam, 1945–46.	98	..	551 (fuel) 52 (charcoal).	8	At 5 tons fuel per 1 ton of charcoal.
	Agaram I, 1945–46.	55	..	400 (fuel). 53 (charcoal).	12	Do.
	Agaram II, 1945–46.	59	..	394 (fuel). 46 (charcoal).	10	Do.
	Agaram III, 1945–46.	218	..	463 (fuel).	..	
	Agaram IV, 1947–48.	84	..	127 (fuel).	1½	
Tirukkoyilur ..	Athipakkam Reserve Forest, South, 1946–47.	600	..	458 (fuel).	¾	
	Athipakkam North, 1946–47.	112	..	50 (fuel).	5–11 or ½	

SECTION 5.—REVENUE AND EXPENDITURE.

93. From 1st April to 15th July 1945, there was a coastal casuarina division in charge of an Assistant Conservator of Forests, who was selecting suitable areas for raising casuarina plantations. The Chingleput Forest Division was formed with effect from 16th July 1945. Statements of revenue and expenditure for 1945–46 and 1946–47 are furnished below. An analysis of figure shows that there was a net deficit of Rs. 1,33,642 in 1945–46 and a net deficit of Rs. 2,14,928 during 1946–47. This result is only to be expected from the fact that degraded forests yielding little direct revenue have been taken over and that very large areas are being artificially regenerated with casuarina at considerable expense with no immediate revenue.

(i) *Revenue.*

Particulars.	1945–46.			1946–47.		
	RS.	A.	P.	RS.	A.	P.
X. (*a*) Firewood and charcoal	101	14	0	232	0	0
Other minor produce	31	8	0	16	10	0
(*b*) Firewood and charcoal	27,622	1	0	9,840	12	0
Grazing and fodder grass	3,200	12	0	4,232	6	0
Other minor produce	744	10	0	1,095	6	0
(*c*) Drift and waif wood	..			..		
Confiscated forest produce	4	1	0	53	8	0
(*e*) Miscellaneous—						
Fines and forfeitures	781	12	0	867	14	0
Rents of buildings	67	8	0	162	10	0
Other sources	2,475	4	0	5,450	12	0
Grand total ..	36,029	6	0	21,971	14	0
(*g*) *Deduct*—Refunds	990	0	0	703	12	0
Net total ..	35,039	6	0	21,268	2	0

(ii) *Expenditure.*

Particulars.	1945–46 *up to* *15th July* 1945. RS. A. P.	1945–46 *from* *16th July* 1945 *to* 31*st* *March* 1946. RS. A. P.	1946–47. RS. A. P.
10. (*b*) A. Firewood and charcoal ..	..	..	8 0 0
B. Timber, etc.	47 0 0	1,494 2 0	2,824 14 0
C.C.L.A. ..	39 0 0	1,840 10 0	3,675 14 0
C. 2 Stores ..	.	1,191 13 0	850 8 0
E. 1. Regeneration ..	..	1,17,572 11 0	1,59,305 15 0
F. 3. Other works—			
Maintenance of boundaries ..	..	..	264 7 0
Other items ..	..	..	162 1 0
Other charges—			
Miscellaneous ..	..	49 8 0	..
	86 0 0	1,22,148 12 0	1,67,091 11 0
10. (*c*) Establishment—			
A. Pay of Officers—Authorized ..	1,240 0 0	2,030 0 0	2,930 9 0
B. Pay of Establishment—Temporary ..	2,866 0 0	14,620 4 0	34,019 15 0
C. Allowances—			
Travelling allowance—Voted ..	1,139 0 0	3,443 5 0	5,485 13 0
Fixed travelling allowance ..	277 0 0	1,081 8 0	2,826 6 0
Other compensatory ..	217 0 0	90 13 0	102 5 0
War and dearness allowance ..	2,027 0 0	9,652 14 0	20,442 10 0
D. Contingencies—			
Service postage and telegram charges ..	171 0 0	698 9 0	1,197 0 0
Pay of menials ..	..	75 11 0	151 0 0
C.C.L.A. ..	..	102 11 0	192 0 0
Tour charges ..	18 0 0	25 3 0	73 14 0
Office expenses ..	9 0 0	190 14 0	247 2 0
Apparatus and materials ..	..	61 3 0	..
Other charges ..	13 0 0	6,396 10 0	1,436 2 0
Total ..	7,977 0 0	38,469 9 0	69,104 12 0
Grand total ..	8,063 0 0	1,60,618 5 0	2,36,196 7 0

(iii) *Financial results for* 1945–46 *and* 1946–47.

Particulars.	1945–46.	1946–47.	*Particulars.*	1945–46.	1946–47.
	RS.	RS.		RS.	RS.
(1) Revenue from timber and other produce removed from the forests.	133	249	(1) Charges for item (i) ..	..	8
			(2) Charges for item (ii) ..	3,421	6,500
			(3) Formation, protection and improvement of forests.	65,260	2,29,688
(2) Other revenue ..	34,906	21,019			
Total ..	35,039	21,268		1,68,681	2,36,196
			Net deficit ..	1,33,642	2,14,928

PART II.

CHINGLEPUT REVENUE DISTRICT.

Future management discussed and prescribed.

CHAPTER I.—BASIS OF PROPOSALS.

SECTION 1.—GENERAL OBJECTS OF MANAGEMENT.

94. *General.*—This working plan deals with the reserved forests within the Chingleput Revenue district included in the Chingleput Forest Division. These forests were under departmental control until 1925 when they were handed over to the Revenue Department for management under panchayats.

95. The Chingleput Forest Division was formed with effect from 16th July 1945 with the definite idea of taking back the panchayat managed reserved forests to departmental control as it was found that during the period from 1925 to 1945 when the forests were managed by the panchayats, they deteriorated to a great extent as a result of continued maladministration.

96. *Objects.*—The objects of management are, in consequence, various and may be summarised as follows :—

(*a*) Protection and conservation of the forests enforcing rigid protection as they are now in a highly degraded condition,

(*b*) to exploit the forests for fuel, minor forest produce and manure leaves (with due regard to silvicultural principles) to a limited extent wherever such exploitation is possible,

(*c*) to supply, conformably with strict principles of conservancy, the agricultural, pastoral and domestic needs of the surrounding population without putting an undue strain on the forests, which are now in a degraded condition,

(*d*) improvement of the quality of the forests as quickly as practicable by regenerating them in as inexpensive a manner as possible, without sacrificing results, with more valuable and useful species such as casuarina, *Prosopis juliflora*, *Inga dulce*, etc., and

(*e*) to conserve the forests on the low hills and denuded slopes and protect them in the interests of water-supply and agriculture.

SECTION 2.—METHODS OF TREATMENT ADOPTED.

97. *Methods.*—(1) Conversion of existing degraded deciduous forests into valuable plantations of casuarina ;

(2) clear-felling the existing tree-growth in suitable localities and planting with fast-growing fuel species ;

(3) clear-felling at the end of the rotation the existing casuarina plantations and replanting with casuarina ;

(4) supply of manure leaf from the forests to the agricultural population under the permit system ;

(5) planting in suitable localities manure leaf-yielding species ; and

(6) providing grazing and improving the watering facilities in the forests for the local cattle.

SECTION 3.—WORKING CIRCLES, THEIR AREAS AND DISTRIBUTION AND REASONS FOR CONSTITUTION.

98. Six working circles have been formed as shown below in pursuance of the objects of management :—

Working Circle.		Distribution.		Remarks.
Serial number and name.	*Extent.*	*Range.*	*Reserves.*	
	ACS.			
1 Casuarina Conversion Working Circle.	2,953	Chingleput, Tirupporur and Sriperumbudur.	Gudalur, Senkundram Bits I and II, Mannur, Kattankolathur, Sonalur, Mambakkam, Kayar, Kolathur, Thaiyur, Kattur reserves, Maiyur reserved land and Nemali unreserve.	For conversion of the areas into the casuarina plantations for fuel.
2 Fuel Plantation Working Circle ..	2,595	Do.	Gudalur, Senkundram, Vandalur and extension, Unamancheri, Kumili and extension, Sonalur and extension, Thaiyur, Kattur and extension, Salur and extension and Navalur.	For planting fast-growing fuel species for fuel.
3 Manure Leaf Working Circle ..	9,788	Do.	Sonalur, Kolathur, Illalur, Alathur, Madayathur, Thirukalikundram, Vattambakkam, Vadakkupattu, Kavanur, Kumili, Thirutheri, Nemali and Vallam.	For supplying manure leaf to the ryots.
4 Grazing Working Circle	Entire area.	Do.	All the reserves, reserved lands and unreserves in the three ranges, with the exception of specified areas as detailed in paragraph 133.	For grazing.
5 Minor Forest Produce Working Circle.	Do.	Do.	All the reserves, unreserved lands in the three ranges and Maiyur reserved land.	For collection of minor forest produce detailed in paragraph 141.
6 Protection Working Circle	35,090	Do.	All the reserves in the three ranges, not included in any of the working circles except Minor Forest Produce and Grazing Working Circles.	For rigid protection.

SECTION 4.—PERIOD OF THE WORKING PLAN.

99. This Working Plan will be in force for a period of fifteen years, from the 1st of April 1949.

CHAPTER II.—WORKING PLAN FOR THE CASUARINA CONVERSION WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION OF THE WORKING CIRCLE AND CHARACTER OF THE VEGETATION.

100. The Casuarina Conversion Working Circle includes suitable selected areas in reserved forests, unreserves and reserved land which now support a degraded type of deciduous tree-growth, fit for growing casuarina.

101. The original home of casuarina (*Casuarina equisetifolia*) is reported to be Persia, from where it was introduced into Northern Australia and Malay islands. This species would appear to have been introduced into India from these countries about ninety years ago.

102. Casuarina is not of much value as a timber tree, but small poles are much in demand. It is an excellent fuel which burns well even when partly green. In a given time, it produces a large volume of wood, hardly reached by any other species in the locality suited to it. Due to this fact, and due to the ease with which it can be raised artificially, it has spread rapidly all over Southern India.

103. Casuarina planting by private individuals in patta lands was attempted in several parts of the division and such private plantations form a greater percentage to casuarina plantations raised by the Forest Department in forest areas. Such departmental plantations were raised in the years 1944, 1945 and 1946 over an aggregate area of 5,340 acres. These plantations did not, however, come up well due to the reasons mentioned in paragraphs 85 to 89 of Part I. Hence, in selecting areas for inclusion in the Casuarina Conversion Working Circle, care was taken to test the soil by digging pits in different localities to a depth of a little over 3 feet. Only areas which were found to contain soils of the red loam or the sandy type and not less than three feet in depth have been considered suitable for growing casuarina.

104. *Character of vegetation.*—The areas selected for planting casuarina at present support a degraded type of forest containing the deciduous and thorny species, such as: (1) *Memecylon edule*, (2) *Maba buxifolia*, (3) *Randia dumetorum*, (4) *Cassia spinarum*, (5) *Webra corymbosa*.

105. The soils met with fall into two distinct types, viz.: (*a*) red loam and (*b*) sandy loam. Wherever such soils do not have a rocky substructure above three feet from below the ground have been selected for casuarina.

106. *Area.*—The Working Circle has an aggregate area of 2,953 acres.

107. *Division into planting series.*—The Working Circle is divided into six planting series as shown below :—

		Casuarina Conversion Working Circle.		*Felling series.*	
Serial number and range. (1)	*Name of reserved forest.* (2)	*Particulars.* (3)	*Area.* (4)	*Name.* (5)	*Area.* (6)
			ACS.		ACS.
1 Chingleput ..	Gudalur	1945 casuarina plantation	75	Gudalur ..	402
		1946 casuarina plantation	102		
		Areas selected in 2 bits in reserved forest.	225		
2 Do. ..	Senkundram Bit I.	Area selected in 1 bit in reserved forest.	100	Maiyur ..	600
	Senkundram Bit II.	Do.	125		
		1946 casuarina plantation	75		
	Maiyur	1945 casuarina plantation	100		
	Reserve land ..	1946 casuarina plantation	110		
		Area selected in the reserved land ..	90		
3 Sriperumbudur.	Mannur	1945 casuarina plantation	51	Mannur ..	603
		1946 casuarina plantation	50		
		Area selected in the reserved forest.	452		
	Kattankolathur.	1946 casuarina plantation	50		
4 Tirupporur ..	Sonalur	Area selected in the reserved forest.	90	Mambakkam.	500
	Mambakkam ..	Do.	280		
		1946 casuarina plantation	48		
		Do.	82		
5 Do. ..	Kayar	1944 casuarina plantation	49	Mayar ..	438
		1946 casuarina plantation	89		
		Area selected in the reserved forest.	200		
6 Do. ..	Kolathur.. ..	Areas selected in the reserved forest.	200	Thaiyur ..	410
	Thaiyur	1944 casuarina plantation	54		
		1945 casuarina plantation	22		
	Kattur	1946 casuarina plantation	43		
	Nemali unreserve.	1945 casuarina plantation	65		
				Total ..	2,953

N.B.—The areas selected in the reserved forests and the reserved land have been shown in the working plan map for the Casuarina Conversion Working Circle.

108. The total area of the working circle, viz., 2,953 acres comprises of 1,091 acres of existing casuarina plantations and 1,862 acres selected for future planting. The latter area has not been surveyed and the extent noted in this plan does not claim to be accurate.

109. The annual planting area has been fixed with reference to the availability of labour and the possibility of efficiently getting the ground ploughed by means of a bulldozer tractor under present conditions. As past experience has not shown that degree of success in casuarina planting in inland areas as it has given in the coastal areas, it has been proposed to take up planting small areas varying from 10 to 15 acres in each of the six series during the first three years of this Working Plan and increase the area in subsequent years, if results justify it.

110. The following statement shows the details of areas to be planted each year in each planting series :—

1. *Chingleput Range.*

Year of planting.	*Gudalur Series.*		*Maiyur Series.*	
	Locality.	*Area.*	*Locality.*	*Area.*
		ACS.		ACS.
1949–50 ..	Gudalur Reserved Forest—Scrub area.	10	Senkundram Reserved Forest—**Scrub area**—Bit II.	15
1950–51 ..	Do.	10	Do.	15
1951–52 ..	Do.	10	Do.	15
1952–53 ..	Do.	50	Do.	80
1953–54 ..	Do.	50	Senkundram Reserved Forest—Scrub area—Bit I.	50
1954–55 ..	Do.	50	Do.	50
1955–56 ..	Do.	45	Maiyur Reserved Forest—1945 area (part).	70
1956–57 ..	Gudalur Reserved Forest—Part of 1945 area.	38	Maiyur Reserved Forest—1945 area (part) and 1946 area (part).	70
1957–58 ..	Do.	37	Maiyur Reserved Forest—1946 area (part).	70
1958–59 ..	Gudalur Reserved Forest—Part of 1946 area.	51	Senkundram Reserved Forest—1946 area—Bit II.	75
1959–60 ..	Do.	51	Senkundram Reserved Forest—1949, 1950 and 1951 areas.	45
1960–61 ..	Gudalur Reserved Forest—1949, 1950 and 1951 areas.	30	Senkundram Reserved Forest—1952 area.	80
1961–62 ..	Gudalur Reserved Forest—1952 area.	50	Senkundram Reserved Forest—1953 area—Bit I.	50
1962–63 ..	Gudalur Reserved Forest—1953 area.	50	Senkundram Reserved Forest—1954 area.	50
1963–64 ..	Gudalur Reserved Forest—1954 area.	50	Maiyur Reserved Forest—1955 area.	70

2. *Sriperumbudur Range.*

Year of planting.	*Mannur Series.*	
	Reserved forest.	*Area.*
		ACS.
1949–50	Mannur Reserved Forest—Scrub area	15
1950–51	Do.	15
1951–52	Do.	15
1952–53	Do.	87
1953–54	Do.	80
1954–55	Do.	80
1955–56	Do.	80
1956–57	Do.	80
1957–58	Mannur Reserved Forest—1945 area	51
1958–59	Do. 1946 area	50
1959–60	Kottankolathur Reserved Forest—1949, 1950 and 1951 areas ..	45
1960–61	Mannur Reserved Forest—1952 area	87
1962–63	Do. 1953 area	80
1963–64	Do. 1954 area	80

5. *Tirupporur Range.*

Year of planting.	*Mambakkam Series.*		*Thaiyur Series.*		*Kayar Series.*	
	Locality.	*Area.*	*Locality.*	*Area.*	*Locality.*	*Area.*
		ACS.		ACS.		ACS.
1949–50	Mambakkam Reserved Forest—Scrub area.	10	Kolattur Reserved Forest—Scrub area ..	10	Kayar Reserved Forest—Scrub area ..	10
1950–51	Do.	15	Do. ..	15	Do. ..	15
1951–52	Do.	15	Do. ..	15	Do. ..	15
1952–53	Do.	60	Do. ..	40	Do. ..	52
1953–54	Do.	60	Do. ..	40	Do. ..	52
1954–55	Do.	60	Do. ..	40	Do. ..	52
1955–56	Do.	60	Do. ..	40	Do. ..	52
1956–57	Sonalur Reserved Forest—Scrub area ..	45	Thaiyur Reserved Forest—1944 area ..	54	Do. ..	52
1957–58	Do. ..	45	Do. 1945 area .. Kattur Reserved Forest—1946 area ..	48	Kayar Reserved Forest—1944 area ..	49
1958–59	Mambakkam Reserved Forest—1944 area.	48	Nemeli Unreserve—1945 area	64·95	Kayar Reserved Forest—1946 area (part).	45
1959–60	Do. 1946 area.	32·5	Thaiyur Reserved Forest—1946 area ..	43	Do.	44
1960–61	Mambakkam Reserved Forest—1949, 1950 and 1951 areas.	40	Kolattur Reserved Forest—1949, 1950 and 1951 areas.	40	Kayar Reserved Forest—1949, 1950 and 1951 areas.	40
1961–62	Mambakkam Reserved Forest—1952 area.	60	Kolattur Reserved Forest—1952 area ..	40	Kayar Reserved Forest—1952 area ..	40
1962–63	Do. 1953 area.	60	Do. 1953 area ..	40	Do. 1953 area ..	40
1963–64	Do 1954 area.	60	Do. 1954 area ..	40	Do. 1954 area ..	40

SECTION 2.—METHOD OF TREATMENT.

111. *System.*—The silvicultural system will be clear-felling and planting with casuarina.

112. *Rotation.*—The correct rotation for casuarina plantation is the age at which the mean annual increment culminates. This corresponds to the rotation of maximum volume production and, as there is no price increment with size of fuel, it is also the financial rotation. As we are primarily concerned with augmenting the depleted fuel resources of the division, we should prefer the rotation of maximum volume production even if this should happen to be less than the financial rotation. As the oldest plantation in this district is barely three years old, it is not possible to take measurements of the rate of growth of the casuarina trees and crops and work out the age at which the mean annual increment culminates.

113. The rotation has been fixed at seven years for the adjoining Nellore division where the rate of growth is expected to be higher. Private tope-owners in Chingleput and South Arcot districts fell casuarina about 6 to 10 years after planting.

114. The rotation is, therefore, fixed empirically at 8 years. The rotation may, however, be increased to ten years if the rate of growth during the currency of this Working Plan is found to warrant it.

115. *Espacement.*—During 1944–45, the espacement was 6 feet by 6 feet. It was changed to 7 feet by 7 feet during 1946. The quality of the plantations raised in this district is on the whole very poor compared with the casuarina plantations in Nellore and Godavari districts. Also, small-sized prunings and small-sized stems are saleable at a profit in the surrounding markets. Hence, it is considered desirable by the Chief Conservator to have an espacement of 3 feet by 3 feet, as the cost of plantation with 3 feet by 3 feet espacement will not be much above one with 6 feet by 6 feet espacement, because of the dry technique adopted. The position will, however, be reviewed at the end of five years in consultation with Provincial Silviculturist.

116. *Preparation of the area.*—The scrub area selected for planting is of such poor quality that there is likely to be no demand for the standing growth.

117. The growth on the annual area will be clear-felled in April. If the felled material is saleable, it should be sold with a time-limit for its removal before the end of April. Otherwise, the unsaleable material should be evenly spread over the area and burnt. The area will then be ploughed with a bull-dozer tractor.

This operation has the effect of uprooting the stumps and roots and making the soil soft to a depth of about 9 inches. (If bull-dozer is not available for hire with the Agricultural department, the operation will be carried out by manual labour. In this case not only will the local labour be insufficient to tackle large areas, but the cost of the operation also will be considerably higher.) The bull-dozer leaves the worked up soil in big heaps all over the area. The area will, therefore, be levelled up using manual labour after the bull-dozer vacates the area. It is also desirable to make contour bunds of 2 feet width, and 1½ feet high, at intervals of two or three chains, in order to prevent the rapid flow of rain water and to make the rain water soak into the soil.

118. *Silvicultural requirements of casuarina.*—Casuarina is a strong light demander and grows very fast. As it is easily suppressed, it needs pruning and fairly heavy thinning. Otherwise, it tends to become stunted and branchy. Although casuarina is grown on a wide range of soils varying from pure sands on the sea-board to inland sandy loam and red loamy soils, at least 3 feet in depth, it is known to grow best on fine silvery sands of sea-coast coupled with a low water table, i.e., at not greater than 6 feet depth from the ground level in the hottest part of the year. It does not thrive on heavy soils and suffers from drought on course sands and when the water table is too low.

The fine long roots of the plant enables it to draw moisture from a wide range of apparently dry sand.

Casuarina obtains its nitrogen from the air with the help of certain symbiotic bacteria living in nodules in the root.

119. *Artificial regeneration of casuarina.*—Casuarina flowers and fruits twice a year in the months of January and June. The cones usually burst in October-November. They may be collected just before they burst from healthy mother trees at least eight years old. Ripe cone is distinguished from unripe one by its brownish colour. The seeds do not retain their fertility for more than a few months. The cones which are collected should be carefully dried on dry floor. As the seeds are liable to be easily blown away by winds, the usual method of drying the seeds is to spread a cloth over a country cot and,

on it, to spread the cones and cover them with another cloth weighted down at the corners and put out the cot in the sun. Seeds that should burst from the cones on the first or second day of exposure to sun-light are considered fertile. Ants are very fond of casuarina seeds. The seeds should be protected against ants by spraying ash all round the cot. Keatings powder may also be used for keeping ants off. After drying the seeds, they are usually preserved in earthern pots, taking care to close the mouths of the pots tightly to prevent ants from getting in and eating them. About 20,000 seeds go to weigh an ounce.

120. *Nursery.*—According to the area to be planted, one or more nurseries will be established at a convenient place near the middle of each year's area to be planted, in December. The area will be strongly fenced all round. A well will be dug in the middle of the site. The nursery site selected should, as far as possible, be free from white ants. The usual practice is to plough the site several times after rains of the south-west monsoon have stopped and manure it by penning sheep. Goat manure or farm-yard manure is not generally used for casuarina nurseries. The area is then hoed to a depth of 9 inches, mixing the droppings of sheep well into the soil. Beds are then formed 40 feet × 4 feet, and about 9 inches high, radiating from the well in the centre with a 3 feet wide path or gangway between beds. After hoeing, the beds are tamped with hands till a fairly firm surface is obtained. Seeds of casuarina are then sown broadcast uniformly at the rate of about one pound of seeds per bed. After sowing, fine sand or ash is sprinkled over the seeds through a bamboo sieve just enough to cover the seeds. After completing the sowing, the beds will be profusely watered by means of a watering can fitted with a fine rose. Watering will be done both in the morning and evening for about three weeks till the seedlings are about one inch high. It takes about a fortnight for the seeds to germinate. If there is an attack of red ants, which carry the seeds away, copper sulphate at the rate of one tola in two seers of water may be dissolved and sprinkled over the beds. The seedlings develop rapidly and reach a height of about 2 feet by the following October and develop a tap root of about one foot or one and half.

121. *Tending in nurseries.*—Nurseries should always be kept clear of all weeds. There should be no disturbance of the young seedlings, while removing the weeds. Congested patches will be thinned out by pricking out the weaker seedlings and transplanting them in a new bed. The seedlings, which are allowed to grow in the original bed, should be encouraged to develop as big a tap root as it can before the time comes for planting. When taking the seedlings from the nursery bed, they should *not* be pulled out of the beds. The correct thing to do is to water the beds profusely and then dig out the plants.

122. *Number of plants in a standard bed of 40 feet by 4 feet.*—From a bed of 40 feet by 4 feet, about 3,000 plants may be expected for transplanting. Careful calculation is necessary to see that there are sufficient plants for replacing casualties.

123. *Planting.*—Pits of one foot cube will be dug at an espacement of 3 feet by 3 feet in July-August, after a good rain has fallen. In the months of September-November, after the north-east monsoon has set in, the soil excavated from the pits shall be thrown back into the pits. Healthy casuarina seedlings with a shoot of not less than 18 inches and root of not less than 12 inches will be planted in the pit, in a hole made in the pit.

124. The following details should be observed in pricking out the seedlings from the nursery :—

(1) the nursery seedlings, which should be about seven months old, will be dug up from the nursery as shortly before planting as possible ;

(2) the fine particles of soil adhering to the roots should not be shaken off.

In planting a seedling in loose soil, its tap root is held in the pit at the proper depth, without being bent, and the soil is thrown in from all sides. The soil should be moist at the time of planting. It should be well pressed round the roots, without leaving air spaces.

The planting will be completed as quickly as possible after it is commenced. No watering will be done as the technique to be adopted is what is known as the " Dry technique".

125. *First summer after planting.*—The first summer after planting is the most critical stage in the life of a casuarina plantation. When long periods of drought occur, the smaller plant, which will not have sent down a sufficiently long tap-root to reach the summer water-table, begin to die in large numbers. Inasmuch as the plantation is raised under the " Dry technique ", it is necessary to do soil working at frequent intervals at this stage.

126. *Replacement of casualties.*—All casualties will be replaced in the first year as soon as they are noticed. For the replacement of casualties the seedlings that may be left in the nursery for the purpose may be used.

Plants should be allowed to establish themselves quickly and uniformly all over the planted area. Plants that establish themselves without the tips of the leading shoots withering grow vigorously and well. Those plants whose tips wither away become bushy and branchy. As soon as tips are seen withering, a second seedling should be planted by the side of the withering plant. In filling up the casualties specially strong and vigorous seedlings will be selected, so that they may not lag behind and suffer from the shade of the neighbouring trees. Normally there should be full stocking at the beginning of the first summer in the April following.

127. *Tending.*—Two weedings will be done in October-December, for a radius of 18 inches round the plants. After the close of the north-east monsoon in January, the plants will be given a thorough soil working for a radius of 18 inches and a depth of 6 inches.

128. *Pruning.*—Free circulation of air is essential for the proper development of casuarina. Depending on the rate of growth of the plants, which under the " Dry technique " may not be as vigorous as in " Wet method ", pruning will be done in the fourth or fifth year if, in spite of the " Dry technique " and close espacement, the plants require it. At the same time, all dead and dying trees in the areas so pruned will be extracted.

129. The following general instructions should be followed in pruning :—

(1) Plants about 3 feet and below in height should not be pruned, but should be left as they are, for pruning in the fifth year.

(2) Plants above 3 feet but below 9 feet in height and about 3 inches in girth will be pruned to about a height of 3 feet taking care to leave enough crown for the plants to develop.

(3) Plants above 6 feet in height and 3 inches in girth will be pruned up to a height of 9 feet.

(4) A sharp knife should be used for pruning and care should be taken not to injure the bark of the stem.

(5) The branches pruned will be cut about one inch away from the stem.

(6) Dead stems will also be removed by the coolies, who do the pruning.

(7) Where there are two or more plants at one pit, the best of them will be retained and pruned and others will be cut flush with the ground.

(8) The pruning work will be taken up during November. It will be done under the close supervision of the Range Officer departmentally. The pruned material will be sold in auction after it is stacked by the pruning coolies. It is expected that the revenue obtained from the sale of pruned material will cover the cost of pruning.

130. *Thinning.*—Casuarina is a strong light demander. It is sensitive to suppression. Close planting results not only in loss of height growth but also in girth, unless thinned early. The " Dry technique ", prescribed, coupled with the close planting at 3 feet by 3 feet, may result in there being no necessity to thin. However, if in the opinion of the District Forest Officer, thinning should be considered necessary, it will be done departmentally. The produce obtained by the thinnings should be sold in auction. All dead, dying, suppressed, top-broken, forked and misshaped trees to be marked and thinned.

131. *Final fellings.*—The following statements show details of casuarina plantations which should be finally felled :—

1. *Chingleput Range.*

Year of felling.	*Gudalur Series.*		*Maiyur Series.*	
	Plantation.	*Area.*	*Plantation.*	*Area.*
		ACS.		ACS.
1954–55	....	..	Maiyur reserved forest, 1945 plantation (part).	70
1955–56	Gudalur reserved forest, 1945 plantation (part).	38	Maiyur reserved forest, 1945 and 1946 plantations (part).	70
1956–57	Do.	37	Maiyur reserved forest, 1946 plantation (part).	70
1957–58	Gudalur reserved forest, 1946 plantation (part).	51	Sengundram Bit II, 1946 plantation.	75
1958–59	Do.	51	Sengundram Bit II, 1949, 1950 and 1951 plantations.	45
1959–60	Gudalur reserved forest, 1949, 1950 and 1951 plantations.	30	Sengundram Bit II, 1952 plantation.	80
1960–61	Gudalur reserved forest, 1952 plantation.	50	Sengundram Bit I, 1953 plantation.	50
1961–62	Gudalur reserved forest, 1953 plantation.	50	Sengundram Bit I, 1954 plantation.	50
1962–63	Gudalur reserved forest, 1954 plantation.	50	Maiyur reserved forest, 1955 plantation.	70
1963–64	Gudalur reserved forest. 1955 plantation.	45	Maiyur reserved forest, 1956 plantation.	70

2. *Sriperumbudur Range.*

	Mannur Series.	
Year of felling.	*Plantation.*	*Area.*
		ACS.
1956–57	Mannur reserved forest, 1945 plantation	51
1957–58	Mannur reserved forest, 1946 plantation	50
1958–59	Kattankolathur 1946 plantation	50
1959–60	Mannur reserved forest, 1949, 1950 and 1951 plantations	45
1960–61	Mannur reserved forest, 1952 plantation	87
1961–62	Mannur reserved forest, 1953 plantation	80
1962–63	Mannur reserved forest, 1954 plantation	80
1963–64	Mannur reserved forest, 1955 plantation	80

3. *Tirupporur Range.*

	Mambakkam Series.		*Thaiyur Series.*		*Kayar Series.*	
Year of felling.	*Plantation.*	*Area.*	*Plantation.*	*Area.*	*Plantation.*	*Area.*
		ACS.		ACS.		ACS.
1955–56	....	..	Thaiyur reserved forest, 1944 plantation	54	....	..
1956–57	....	..	Thaiyur reserved forest, 1945 plantation Kattur reserved forest, 1946 plantation	48	Kayar reserved forest, 1946 plantation	49
1957–58	Mambakkam reserved forest, 1944 plantation.	48	Nemeli unreserved forest, 1945 plantation.	64·95	Kayar reserved forest, 1946 plantation (part).	45
1958–59	Mambakkam reserved forest, 1946 plantation.	82·5	Thaiyur reserved forest, 1946 plantation	43	Do.	44
1959–60	Mambakkam reserved forest, 1949, 1950 and 1951 plantations.	40	Kolattur reserved forest, 1949, 1950 and 1951 plantations.	40	Kayar reserved forest, 1949, 1950 and 1951 plantations.	40
1960–61	Mambakkam reserved forest, 1952 plantation.	60	Kolattur reserved forest, 1952 plantation	40	Kayar reserved forest, 1952 plantation	52
1961–62	Mambakkam reserved forest, 1953 plantation.	60	Kolattur reserved forest, 1953 plantation.	40	Kayar reserved forest, 1953 plantation	52
1962–63	Mambakkam reserved forest, 1954 plantation.	60	Kolattur reserved forest, 1954 plantation	40	Kayar reserved forest, 1954 plantation	52
1963–64	Mambakkam reserved forest, 1955 plantation.	60	Kolattur reserved forest, 1955 plantation.	40	Kayar reserved forest, 1955 plantation	52

132. *Agency of fellings.*—The casuarina plantation due for final felling will be sold in public auction in February with lease period for the following financial year. In the case of the small-sized plantations to be raised in 1949–50 to 1952–53, the District Forest Officer should fix a reasonably shorter period of lease. As each plantation will have been previously demarcated at the time of planting, no fresh demarcation is called for before sale. However, care should be taken to correctly survey the plantation before sale and note the surveyed area in the sale notice.

133. *Felling Rules.*—As the area felled in any year will have to be replanted with casuarina in the following year, the following felling rules should be rigidly enforced :—

(1) The entire standing growth will have to be uprooted to a depth of not less than 12 inches and then billetted into three feet billets and stacked in stacks of 9 feet × 3 feet × 3 feet.

(2) The area should be thoroughly levelled at the end of the felling so as to cover all extraction pits and facilitate planting subsequently.

134. *Fencing.*—During the first year, casuarina is susceptible to damage by browsing of cattle. Hence, special military wire fencing should be used if available. Otherwise, a trench and mound fencing should be done and *Euphorbia tirucalli* and *Jatropha curcass* should be planted on the bunds to form a live fence. Seeds of *Prosopis juliflora* should also be sown in patches, 3 feet apart, on the bund so as to form an impenetrable live fence.

135. *Wells.*—No wells are required as the "Dry technique" of planting without watering will be adopted.

SECTION 3.—MISCELLANEOUS REGULATIONS.

136. *Demarcation.*—Plantations will be demarcated by planting stones, showing the area and the year of planting at all prominent corners.

137. *Grazing.*—Plantations will be closed to grazing for three years including the year of planting.

138. *Fungus.*—As a precautionary measure all dead and dying trees in the plantations will be extracted as speedily as possible. The working up of the soil at the end of the rotation will, to a certain extent, minimise fungus attacks.

139. *Statistics.*—Figures of yield, and costs of plantation should be accurately maintained.

140. *Rain gauges.*—It is desirable to have exact statistics about the number of rainy days and the quantity of rainfall, in inches, in each of the coupes taken up for artificial regeneration, during the years when they are regenerated. It is therefore suggested that Planter's rain gauges may be installed in the centre of each of the coupes under artificial regeneration during the period from 1st July to 30th June following. The information about rainfall should be recorded in the Plantation journals and Ledger.

141. *Control.*—The following control records shall be maintained by the District Forest Officer. The forms for the control records are given in Appendix IV .—

(1) Control book showing separately control of felling and control of planting.

(2) Record of Works.

(3) Plantation Journal and Ledger.

(4) Nursery Journal and Ledger.

(5) Control Journal.

(6) Control map.

CHAPTER III.—WORKING PLAN FOR FUEL PLANTATION WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION AND CHARACTER OF VEGETATION.

142. *General.*—The Fuel Planting Working Circle comprises of selected areas in ten reserved forests in three ranges suitable for concentrated regeneration operations with miscellaneous fuel species, bearing in mind the following points :—

(i) to bring under maximum fuel production all available suitable areas, which at present support a highly degraded tree-growth ;

(ii) to avoid the repetition of growing casuarina or other species in areas, which previously had failed to give successful results due to various adverse conditions ; and

(iii) to release more of the natural forests for grazing by concentrating regeneration operations to specially selected areas.

143. The areas were selected after digging soil investigation pits, at the rate of one pit approximately for every 40 acres of area so selected. Areas containing boulders or hard gravel and only loamy soils of not less than two feet in depth included, have been excluded from the working circle. Areas which are reasonably well stocked with indigenous fuel species have also been excluded. Care has been taken to see that the selected blocks are not situated too distant from the centres from which labour has to come for regeneration work. Some of the areas, which were not suitable for growing casuarina, have been however included in the working circle, as the species proposed to be grown are not considered too exacting as regards soil.

144. *Area.*—The area of the working circle is 2,595 acres. It is distributed in the three ranges as shown below :—

Range.	*Name of reserved forest.*	*Total area of reserved forest.*	*Area included in the Working circle.*	*Remarks.*
		ACS.	ACS.	
Chingleput	Gudalur	2,327	250	In three bits.
	Senkundram	1,295	195	In four bits.
Sriperumbudur ..	Vandalur and Extension	2,954	150	
	Unamancheri	759	75	
	Kumili and Extension	1,206	300	
Tirupporur	Sonalur and Extension	1,365	100	
	Thaiyur	1,515	500	In three bits.
	Kattur and Extension	3,394	650	In two bits.
	Salur and Extension	949	300	
	Navalur	..	75	
		Grand total ..	2,595	

145. *Division into planting series.*—The working circle is divided into five planting series as follows :—

Range.	*Name of felling series.*	*Reserved forests.*	*Area.*	*Total area of the planting series.*
			ACS.	ACS.
Chingleput	Gudalur	Gudalur	250	
		Senkundram, Bit II	125	
		Senkundram, Bit I	70	445
Sriperumbudur	Vandalur	Vandalur	150	
		Unamancheri	75	
		Kumili	300	525
Tirupporur	Thaiyur	Sonalur	100	
		Thaiyur	500	600
Do.	Kattur	Kattur	650	650
Do.	Salur	Salur	300	
		Navalur	75	375
			Grand total ..	2,595

146. *Character of vegetation.*—The present crop is variable both in its composition and condition. Most of it is low open scrub either of the evergreen (Memecylon type) or the thorny and inferior deciduous variety. Some areas contain a middling quality of tree-growth of the miscellaneous deciduous species. It is more fully described in paragraph 29 of Part I.

The general type of soil in the areas selected consists of sandy loam or red loam, of fair depth, free from rocks and boulders and with fair drainage.

SECTION 2.—METHOD OF TREATMENT.

147. *System.*—The sylvicultural system will be clear-felling the area and planting it with suitable fast-growing fuel species.

148. *Rotation.*—Rotation is not of immediate importance, as the object is to cover the entire area of the working circle as quickly as possible during the period of the plan. A rotation of 30 years may be required, before the areas, now planted, become ripe for felling.

149. *Yield.*—The areas prescribed for clear-felling contain only degraded and stunted growth and so, there will be no yield of fuel. The annual coupe will be clear-felled departmentally, the slash piled in strips and burnt. No yield of commercial quantity or value will therefore be expected to be obtained from the area in the first instance. When the areas now replanted become mature, the yield is expected to be not less than 10 tons per acre.

150. *Agency of planting.*—The planting will be done departmentally subject to the condition that, if the District Forest Officer in any year finds it possible to secure kumridars for regeneration operations, he will do so in addition to the normal departmental operations. In the event of the kumridars becoming available, the instructions in paragraphs 156–160 below will be followed.

151. The following statement shows the area allocated in each planting series to be taken for planting each year :—

Felling series.	*Name of reserve.*	*Number of bits in the reserved forest.*	*Location of the bit.*	*Area of the bit.*	*Place where planting may commence and end.*
				ACS.	
Gudalur ..	Gudalur ..	I	North of 1946 plantation adjoining Chingleput-Madras road.	65	Start on the northern side of 1946 casuarina plantation and proceed towards north along the road.
		II	North of reserved forest line between Cairn Nos. 73 and 84.	125	Start from the east, and proceed towards west.
		III	West of reserved forest line between Cairn Nos. 41–43.	60	Start in the south advancing towards north along reserved forest line.
	Senkundram, Bit I.	I	Southern end of reserved forest as seen from the map.	70	Start from east and proceed towards west.
			South of Cairn Nos. 86, 87. 88.	45	
	Senkundram, Bit II.	II	West of the reserved forest line between Cairn Nos. 60–63.	60	Start from north, proceed towards south along the reserved forest line.
		III	South of Cairn Nos. 71–73.	20	North to south.
Vandalur ..	Vandalur ..	I	West of reserved forest line between Cairn Nos. 17-A–19 and then an arbitrary line.	150	Start from north proceeding south along the reserved forest line up to Cairn No. 19 and thence along the arbitrary line.
	Unamancheri.	I	Southern corner of the reserved forest.	75	Start from the north along the reserved forest line proceeding towards west.
	Kumili ..	I	Western portion of the reserved forest.	300	Start from north along the southern and western reserved forest proceeding south.
Thaiyur ..	Thaiyur ..	II	South of Cairn Nos. 23–29.	180	Start from east and proceed west along the reserved forest line.
		III	North of reserved forest line between Cairns Nos. 46–47.	200	
		I	East of reserved forest line between Cairns Nos. 90–92.	120	Start from west and proceed towards east.
	Sonalur ..	I	North of Vandalur-Kilapakkam road.	100	Start from south proceeding north along the eastern reserved forest line.

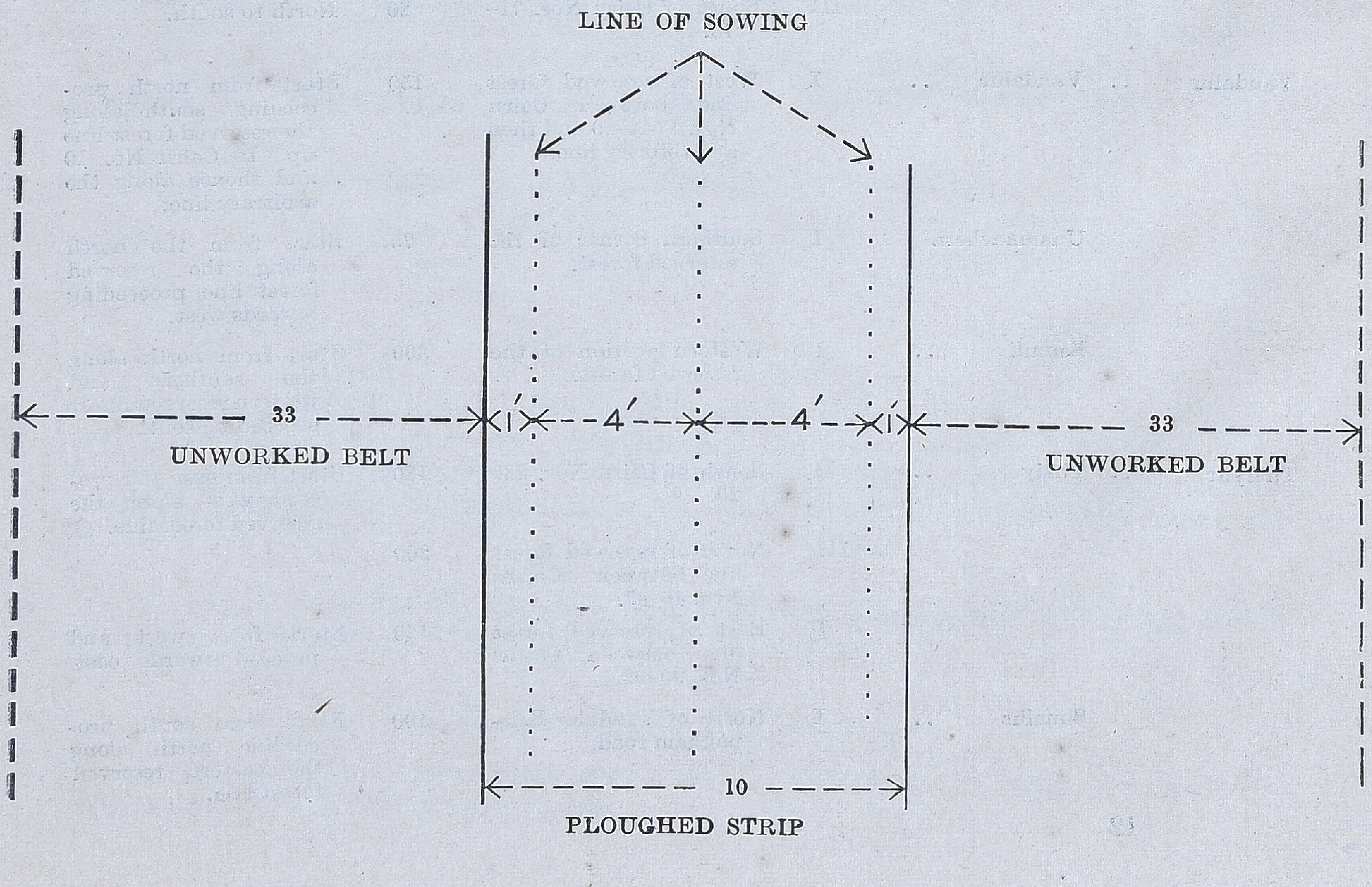
Felling series.	*Name of reserve.*	*Number of bits in the reserved forest.*	*Location of the bit.*	*Area of the bit.*	*Place where planting may commence and end.*
				ACS.	
Kattur	Kattur ..	I	Northern most portion of the reserved forest as seen from the map.	430	Start from the west and proceed eastwards.
		II	South of Tirupporur-Chingleput road, between 9/1–9/3 mile.	220	Start from the south and proceed northwards till you meet the road.
Salur	Salur	I	East of Cairns Nos. 37–44 and terminating at No. 1.	300	Start from north and proceed along reserved forest line towards south.
	Navalur ..	I	South of reserved forest line between Cairns Nos. 1 to 5 west of Cairn Nos. 33–38.	75	
				2,595	

152. *Departmental plantation.*—The area to be regenerated will be demarcated by a cleared line, 6 feet wide, surveyed and plotted to scale, in January. It will be felled in strips 10 feet wide and 33 feet apart from centre to centre between such strips, before end of March.

As root competition of the existing degraded tree-growth and weeds is the main cause of retarding and even preventing a proper growth of the species introduced in the past, it is considered important that, after the tree-growth is felled, the ground should be worked up well by means of a bull-dozer tractor or by manual labour. Such a preliminary of the soil preparation being the most expensive part of regeneration, the area will be clear-felled only in strips and only such strips will be ploughed.

153. Any saleable material will be disposed of. All debris will be evenly spread over the 10-feet wide strip in 4-feet wide belts and burnt in April-May. The soil will then be worked by the bull-dozer to a depth of 9 to 12 inches. Seeds of the following species will be sown in three lines as shown in the diagram in the following. The seeds of the following species will be mixed and sown :—

(1) *Prosopis juliflora,*
(2) *Pitha colobium dulce,*
(3) *Albizzia lebbek,*
(4) *Acacia leucophloea,*
(5) *Acacia farnesiana,*
(6) *Albizzia amara,*
(7) Neem.



154. No sowing will be done in the intervening 33 feet belt, where the existing growth will be allowed to grow under rigid protection. Subsequent soil working and tending will be done by the beat staff on a sanctioned estimate.

155. Casualty replacement in poorly stocked lines will be done departmentally by a second sowing after the south-west monsoon has stopped and before the north-east monsoon begins. The tree-crop will be thinned as and when necessary, under the orders of the District Forest Officer, to remove congestion in thickly grown lines. One simple rule for such thinning is to take the height of the best grown plant of each species in a line and adopt that as the espacement to be adopted between plants to be retained.

156. *Regeneration by the 'kumri' method.*—At present, there is not keen demand for land for cultivation inside the reserved forests. Hence, it is that regeneration by departmental agency has been prescribed as the main system to be adopted. If, however, kumridars become available the District Forest Officer will grant to kumridars land up to 25 acres in the aggregate in any one year, in addition to the normal departmental planting. In selecting kumridars care should be taken to see that the persons so selected are earnest and will do the regeneration successfully. The extent of land given to each kumridar in any year should be consistent with his capacity to regenerate at the proper time under the guidance of the Forest department. The grant of land should be covered by a proper permit under section 21 of the Forest Act. The permit should contain suitable clauses to safeguard the interests of Government on all aspects.

157. The kumridars should be required to sow the seeds of the species, after clear-felling the area and preparing the ground in the same manner as has been detailed in paragraph 153 above. The kumridar will be free to remove the felled material obtained from the area for his *bona fide* domestic use. The land will be demarcated and surveyed and handed over to the kumridar not later than January. The land will be in the possession of the kumridar for five years and no more.

158. Sowing will be done in belts 4 feet width and 33 feet apart from centre to centre. The kumridar will be allowed to cultivate the intervening belts with agricultural crops. He will take care not to disturb the lines sown with tree species. He will keep the tree-lines weeded and free from being suppressed by his agricultural crops. Castor will not be allowed to be raised, as it overtops the tree lines and is very exacting on the soil.

159. The kumridar will soil-work the tree lines twice in the first year of growth. After the agricultural crop is harvested by the kumridar, he will do a ploughing in January. Thereafter, the protection of the tree-crop will be the duty of the local forest staff. Subsequent soil-working during the hot-weather will be done departmentally on a sanctioned estimate. No assessment will be charged for the cultivation of field crop by the kumridar because, in lieu of this concession, the kumridar will do the clear-felling, uprooting, burning, weeding, soil-working, ploughing, etc. The kumridar will be allowed to cultivate the land for a period not exceeding five years.

160. When the kumridar finally relinquishes the land, the intervening belt of 33 feet between the tree lines will be ploughed by him and sown with seeds of good variety of fodder grasses and shrubs, such as the spear grass and avaram, etc.

SECTION 3.—MISCELLANEOUS REGULATIONS.

161. *Grazing.*—Areas regenerated in this working circle will be closed to grazing for five years, including the year of formation.

162. *Demarcation.*—Before commencement of planting, the annual coupe should be demarcated by cleared lines 6 feet wide, surveyed and plotted. Plantation stones, showing the name of series, year of formation and area, should be planted at all prominent corners.

163. *Control.*—The following control records shall be maintained by the District Forest Officer. The forms of the Control Records are given in Appendix IV:—

(*a*) A Control Book for Planting.
(*b*) Fuel Plantation Journal and Ledger.
(*c*) A Record of Works.
(*d*) A Plantation Map.
(*e*) A Control Journal.

CHAPTER IV.—WORKING PLAN FOR MANURE LEAF WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION OF THE WORKING CIRCLE AND CHARACTER OF VEGETATION.

164. *General.*—The manure leaf working circle comprises of the plains portion of the reserved forests in the three ranges.

The reserved forests which were formerly under panchayat management are in need of rest and rehabilitation but consistent with the protection from indiscriminate fellings, there is need in regulate the removal of manure leaf by means of localized fellings since the ryots have been accustomed to remove manure leaf from the reserves illicitly.

Hilly portions and areas selected for artificial regeneration with casuarina and fuel species have been excluded from the working circle.

165. *Character of the vegetation.*—The area allotted to this working circle is mostly open shrub. *Memecylon edule* occurs gregariously everywhere; the other species met with include *Canthium didymum, Cassia auriculata, Dodonea viscosa, Cleistanthes collinus, Erythnoxylon monogynum, Gardenia gummifera, Gardenia latifolia, Grewia asiatica, Ixora parviflora, Pongamia glabra, Webera corymbosa, Wrightia tinctoria, Odina wodier* and *Azadirachta indica*, all of which are lopped for manure leaf. The soil is not particularly good. It varies from red loam to gravelly.

166. *Area.*—The area of the working circle is 9,800 acres and it is divided into eight series of three coupes on each series.

167. *Division of the working circle into felling series and coupes.*—The following statement shows particulars of the felling series and coupes :—

Serial number. (1)	*Range.* (2)	*Reserves comprised.* (3)	*Names of series.* (4)	*Coupe number.* (5)	*Area.* (6)	*Total area of felling series.* (7)	*Remarks.* (8)
					ACS.		
1	Tirupporur	Sonalur	Sonalur	I	320		
			Do.	II	380		
			Do.	III	400		
						1,100	
2	Do.	Kolattur	Kolattur	I	428		
			Do.	II	813		
			Do.	III	425		
						1,666	
3	Do.	Illalur	Illalur	I	691		
			Do.	II	681		
		Madayathur	Madayathur	III	792		
						2,164	
4	Do.	Tirukalikundram.	Tirukalikundram.	I	340		
			Do.	II	500		
			Do.	III	200		
						1,040	
5	Sriperumbudur.	Vattambakkam.	Vattambakkam.	I	614		
			Do.	II	509		
		Kavanur		III	417		
						1,540	
6	Do.	Kumili	Kumili	I	240		
			Do.	II	300		
			Do.	III	296		
						836	
7	Chingleput	Thirutheri	Thirutheri	I	217		
			Do.	II	220		
			Do.	III	230		
						667	
8	Do.	Nemili	Vallam	I	263		
		Do.	Do.	II	312		
		Vallam	Do.	III	142		
						717	
				Grand total		9,730	

SECTION 2—METHOD OF TREATMENT.

168. *System to be adopted.*—The trees and shrubs will be lopped. No branches thicker than a man's thumb shall be cut. The following timber, fuel and minor forest produce yielding trees shall not be lopped :—

Neem, *Chloroxylon swietenia*, Tamarind, *Sipendus emerginatus, Buchanamia latifolia*, Cashewnut, *Albizzia lebbek, Alibizzia amara.*

169. *Felling cycle.*—The felling cycle will be three years. This will give a period of rest of two years for the shoots to grow up in the worked coupes and become ready for the next felling.

170. *Regulation of felling.*—The working will be regulated by area in the year shown in the following statement :—

Coupe X—

I	1949–50	1952–53	1955–56	1958–59	1961–62
II	1950–51	1953–54	1956–57	1959–60	1962–63
III	1951–52	1954–55	1957–58	1960–61	1963–64

As far as possible natural features have been adopted for the boundaries of felling series and coupes.

SECTION 3.—METHOD OF EXECUTING THE FELLINGS.

171. *Demarcation of annual coupes.*—One coupe in each felling series will be worked annually. The coupe to be felled in each series will be demarcated by cut lines 6 feet wide wherever necessary in the year previous to the year of felling.

172. *Agency of fellings.*—By order of Government, the seigniorage system for the removal of manure leaves will have to be continued. Permits will therefore be issued by foresters, for removal of manure leaves from the coupes of the year, at prescribed rates. The rates now in force are—

Re. 0–12–0 per cart-load permit.

Re. 0–0–9 per head-load permit.

173. *Felling rules.*—(i) The growing stock, excepting trees of Neem, *Chloroxylon swietenia*, Tamarind, *Sapindus emarginatus*, *Buchanania latifolia*, Cashewnut, *Albizzia lebbek*, *Albizzia amara* may be lopped subject to the condition that no branches thicker than a man's thumb are cut.

(ii) Shrubs which are less than 3 inches in girth at ground level, excepting the species referred to above, may be cut flush with the ground, a clean cut being made, without tearing the bark, by using a sharp instrument.

(iii) Removals shall take place only between sunrise and sunset.

SECTION 4.—SUBSIDIARY SILVICULTURAL OPERATIONS.

174. In Chingleput district, the supply of manure leaves from the coupes proposed will be quite insufficient to meet the entire demand, on account of the poor quality of growth in the reserved forests. It is, therefore, considered necessary to artificially regenerate manure leaf species in selected areas. An experiment has been started during 1948–49 over 5 acres in Kattur reserve of Tirupporur range for raising manure leaf plantation. This experiment will be continued during the next three years also at the rate of 5 acres each year. If the experiment proves successful, larger areas will be taken up for regeneration in future years.

175. *Agency of regeneration.*—Artificial regeneration with manure leaf species will be carried out departmentally over 5 acres in Kattur reserved forest during each of the years 1949–50, 1950–51 and 1951–52.

176. In the area taken up for regeneration, long strips 6 feet wide and 22 feet apart centre will be laid out. The strips should run along contour lines, so that the surface rain water will get absorbed in the strips under regeneration. In April-May, the strips will be clear-felled and the slash burnt. In June, the soil will be worked to a depth of 9 inches by means of a tractor plough, if one is available. In July, seeds of *Cassia siamea*, *Cassia montona*, *Peltophorum ferrugineum*, *Pongamia glabra* will be sown in lines in the centre of cleared strips. Weeding and soil working will be done as required, during the year. During next year, the plants will be thinned so as to have an admixture of all species. In the uncleared strips of 16 feet wide, seeds of *Cassia auriculata* and *Dodonea viscosa* will be sown broadcast, in July-October. No weeding or tending will be done in the uncleared area.

177. Cutting of *Odina wodier*, *Thespesia populnea* and *Poinciana elata* (to be obtained from Vriddhachalam, Cuddalore and Tirukkoyilur taluks of South Arcot district, where they are grown in private gardens) may also be planted, 12 feet apart on either side of the edge of the cleared strips. The cuttings should be at least 6 feet long and 9 to 12 inches in girth and should be planted, so that 3 feet is buried in the ground.

178. Regeneration may also be attempted through kumridars, if available. The site for regeneration may be located in any of the areas selected for artificial regeneration and the extent may be limited to a maximum of 10 acres at the discretion of the District Forest Officer. The kumridar will clear and uproot the existing growth before end of May. In June-July, seeds of *Cassia siamea* and *monta*, *Peltophorum ferrugineum*, *Pongamia glabra* will

be sown in lines 30 feet apart. A distance of 1½ feet on either side of the sown lines will be maintained without any field crop and in the intervening strips, which will be 27 feet wide, the kumridars will be at liberty to sow field crops. The kumridar will continue to sow field crops for three years in all; during this period he should keep the plant rows well weeded and soil worked at all times. After the last harvest of the field crops, in the third year, when the kumridar is about to vacate the land, seeds of *Cassia auriculata* and *Dodonea viscosa* will be sown broad cast in the strips. Cuttings of *Odina wodier*, *Thespesia populnea* and *Poinciana elata* will also be planted at intervals of 12 feet in the second year, if the lines are not fully stocked by the end of the first year. The instructions regarding the allocation of areas to kumridars and the issue of permit given in paragraph 156 will apply to this working circle also.

179. *Areas for artificial regeneration.*—The following areas have been selected for artificial regeneration with manure leaf species either departmentally or through kumridars. These areas have been marked on the working circle maps :—

Serial number and range.	*Name of felling series.*	*Area of felling series.*	*Area selected for artificial regeneration.*		
			Reserve.	*Area.*	
		ACS.		ACS.	
1 Tirupporur ..	.. Tirukalikundram ..	1,100	Salur	175	
			Navalur	65	
					240
2 Sriperumbudur	.. Vattambakkam ..	1,540	Kattankolathur ..	200	
					200
3 Do.	.. Kumili	836	Kumili	70	
			Vandalur	150	
			Unamancheri ..	75	
					295
4 Chingleput ..	.. Thirutheri	666·5	Gudalur	300	
					300
				Total ..	1,035

SECTION 5.—OTHER REGULATIONS.

180. *Closure to grazing.*—The coupes under artificial regeneration will be closed to grazing for three years including the year of regeneration.

181. *Fire protection.*—No special methods of fire protection are necessary for this working circle.

182. *Control.*—The following control records will be maintained by the District Forest Officer. Sample forms of the Control Records are given in Appendix IV :—

(i) A Control Book.
(ii) A Manure Leaf Plantation Journal and Ledger.
(iii) A Record of Works.
(iv) A Control Journal.

CHAPTER V.—WORKING PLAN FOR MINOR FOREST PRODUCE WORKING CIRLCE.

SECTION 1.—GENERAL CONSTITUTION OF THE WORKING CIRCLE.

183. This working circle comprises of all the reserves, unreserved lands under the control of the Forest department and Maiyur reserved land.

184. *Area.*—The area of the working circle is 51,655 acres.

SECTION 2.—METHOD OF TREATMENT.

185. *Kinds of produce available.*—The principal items of minor forest produce occurring in the division are—

(i) Cashewnuts occurring in Maiyur reserve land and Vattambakkam reserved forest.

(ii) *Buchanania latifolia* (sarapappu seeds) occurring in Gudalur reserved forest.

(iii) Broom sticks and tamarind fruits occurring in Alathur, Madayathur, Illalur and Thaiyur reserved forests.

(iv) Palmyra fruits and leaves occurring in Nanmangalam and Maduraipakkam reserved forests.

(v) The following kinds of minor forest produce occur in the reserves in such small quantities that there is no commercial demand for them now. However, the right to collect them will be sold in auction taking each range as a unit including items (i) to (iv) referred to above :—

(1) Tamarind fruits.
(2) Mango fruits.
(3) Wood apple.
(4) Sarapappu fruits.
(5) Nellikoi fruits.
(6) Elandai fruits.
(7) Nagai fruits.
(8) Pungam seed.
(9) Veppan seed.
(10) Date fruits.
(11) Palmyra fruits and leaves.
(12) Broom stick grass.
(13) Honey and wax.

186. *Agency of exploitation.*—The present system of exploitation of minor forest produce through contractors will continue.

Each range will form a lease unit for the minor forest produce. The lease for each such unit will be from the 1st of July to the 30th of June following, except in the case of cashewnuts and sarapappu, for which the lease period will be from the 1st January to the 30th of June, and for which the lease will be sold in auction earlier than the other items of the minor forest produce.

SECTION 3.—CONTROL.

187. A control book and record of works will be maintained by the District Forest Officer in the form given in Appendix IV.

CHAPTER VI.—WORKING PLAN FOR GRAZING WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION OF THE WORKING CIRCLE.

188. *Constitution.*—The Grazing Working Circle extends over all the reserved forests, reserved lands and unreserves of the division with the exception of certain specified areas, which are, or may be, closed to grazing in the interest of forest conservancy after the long period of maladministration while the areas were panchayat forests and for silvicultural or other reasons.

189. The following areas will be closed to grazing :—

(i) Areas under regeneration as prescribed under the concerned working circle in Chapters II, III and IV.

(ii) Areas which the District Forest Officer may close for valid reasons such as experimental plots, till the results of the experiment are finally recorded.

(iii) Areas temporarily closed by the District Forest Officer as per the rules on the subject as a punitive measure for unauthorized burning.

190. *Area.*—The area of the working circle is 51,655 acres.

SECTION 2.—METHOD OF TREATMENT.

191. *Regulation of grazing.*—Grazing will be regulated by licensing cattle to graze in the forests included in the working plan, on payment of prescribed fees and subject to conditions now in force. The prevailing rates of grazing fees per cow unit are as follows :—

Name of range. (1)	Name of the reserves. (2)	Rate— Cow and bull. (3)		
		RS.	A.	P.
Chingleput	Thirutheri	0	12	0
	Senkundram	0	12	0
	Gudalur and extension	0	12	0
	Hanumanthaputheri	0	13	0
	Paranur and extension	0	12	0
	Nemili and extension	0	12	0
	Vallam extension II	0	12	0
	Vallam reserved forest and extension II ..	0	12	0
	Tirumani and extension	0	12	0
	Anjur	0	12	0

Name of range. (1)	Name of the reserves. (2)	Rate—Cow and bull. (3)		
		RS.	A.	P.
Chingleput—*cont.*	Kattugudalur and extension	0	10	0
	Gudalur A	0	12	0
	Gudalur B.	0	12	0
	Rajapalayam	0	12	0
	Valluvapakkam	0	12	0
	Edamachi	0	12	0
	Kavanipakkam	0	12	0
	Marudam	0	8	0
	Perungoli and extension	0	10	0
Tirupporur	Senkundram	0	9	0
	Anjur extension I	0	12	0
	Madayathur (part)	0	8	0
	Alathur	0	8	0
	Madayathur (part)	0	8	0
	Illalur	0	8	0
	Kayar and extension	0	12	0
	Kolathur and extension I—III	0	12	0
	Taiyur and Kalvoy	0	12	0
	Sonalur and extension	0	12	0
	Mambakkam and extension	0	12	0
	Thirukkalikundram	0	12	0
	Navalur	0	12	0
	Kolathur and extension	0	12	0
	Oragadam	0	12	0
	Salur	0	12	0
Sriperumbudur	Kattankolathur and extension	0	12	0
	Vandalur (part)	0	12	0
	Unamancheri	0	12	0
	Vandalur (part)	0	12	0
	Kavanur	0	12	0
	Mannur	0	12	0
	Vadakkupattu	0	12	0
	Vattambakkam and extension	0	12	0
	Maduraipakkam	0	12	0
	Nanmangalam	0	12	0
	Maganiem	0	8	0
	Nallur	0	8	0
	Siruvanjur	0	8	0
	Do.	0	12	0
	Kumili and extension	0	12	0

192. These rates will continue to be in force. It is desirable that the grazing rates for the entire division, is fixed uniformly at the rate of Re. 0–12–0 per cow unit, for which action will be taken by the territorial Conservator in due course.

The grazing year will be from 1st July to 30th June following.

N.B.—Goats will not be permitted to graze under any circumstances.

193. *Monsoon closure to grazing during July and August.*—While under panchayat management, the forests were closed to grazing during the months of July and August every year, in order to allow the grass to grow. This monsoon-closure will be continued and grazing permits will be valid for only 10 months from 1st September to 30th June. The local people have been accustomed to this closure and they will not feel this as a hardship.

194. *Penning.*—No penning permits have been issued in the past and the cattle from adjoining forests can reach the forests and return to the village in the evening. Hence there is no demand for penning in any of the reserved forests.

SECTION 3.—IMPROVED METHODS OF GRAZING.

195. Under panchayat management, the villagers had been overgrazing the area and even goats had been browsing illicitly. The conditions in this division are not, therefore, suitable at present for the introduction of rotational grazing, or other improved systems of grazing, such as the local block system or the special block system. Any attempt to introduce restrictions in grazing (except monsoon closure, to which people are accustomed), is likely to be resisted by the villagers. It is, therefore, desirable that we proceed cautiously and slowly in this matter with a view to educate the villagers on improved methods of grazing and thus get their willing co-operation. Hence, rotational grazing or other improved systems of grazing will not be introduced during the first five years; but, later on, the District Forest Officer will, at his discretion and in consultation with the territorial Conservator, introduce rotational grazing or other systems, wherever he considers suitable.

SECTION 4.—CONTROL.

196. *Control.*—The following control records will be maintained by the District Forest Officer :—

(i) A control book.

(ii) A record of works.

(iii) A control journal.

The forms will be found in Appendix IV.

CHAPTER VII.—WORKING PLAN FOR THE PROTECTION WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION OF THE WORKING CIRCLE.

197. This working circle comprises of all the reserved forests of the division not included in any of the working circles, except the minor forest produce and the grazing working circles. Due primarily to the poor growth and also due to these reserved forests being located in steep and eroded hill slopes, exploitation of any kind is not recommended. The catchment area for numerous small channels, which feed irrigation tanks dotted all over the district, is located in the reserved forests included in the Protection Working Circle. It is hoped that strict protection during the next 15 years will improve the growth.

198. The working circle covers 35,090 acres as per the following details :—

Areas taken up for the working circles.

Serial number and name of reserved forests.	*Area.*	*Casuarina conversion.*	*Fuel Plantation.*	*Manure leaf* — *Area for regeneration.*	*Manure leaf* — *Area for coupe working.*	*Total area.*	*Balance area left for protection working circle.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ACS.	ACS.	ACS.	ACS.	ACS.	ACS.	ACS.
CHINGLEPUT RANGE.							
1 Gudalur and Extensions I and II.	2,327	402	250	300	..	952	1,375
2 Senkundram and Extensions I and II.	1,295	300	195	..	..	495	800
3 Thirutheri and Extensions I and II.	851	..	..	..	667	667	184
4 Hanumanthaputheri and Extensions I and II.	571	..	..	..	..	..	571
5 Paranur and Extensions I and II.	637	..	..	..	..	..	637
6 Thirumani and Extension.	753	..	..	..	..	..	753
7 Nemali and Extension ..	1,291	..	..	..	575	575	716
8 Vallam	1,727	..	..	..	142	142	1,585
9 Anjur and Extension ..	1,627	..	..	..	..	..	1,627
10 Kattugudalur and Extension.	2,434	..	..	..	..	..	2,434
11 Gudalur A and B	1,289	..	..	..	..	..	1,289
12 Rajapalayam	398	..	..	..	..	..	398
13 Koliyalam	839	..	..	..	..	..	839
14 Valluvapakkam	612	..	..	..	..	..	612
15 Edamachi	847	..	..	..	..	..	847
16 Kavanipakkam	708	..	..	..	..	..	708
17 Marudam	1,125	..	..	..	..	..	1,125
18 Perungoli and Extensions I and II.	712	..	..	..	..	..	712
Total ..	20,043	702	445	300	1,384	2,831	17,212

Areas taken up for the working circles—cont.

				Manure leaf			
Serial number and name of reserved forests. (1)	*Area.* (2)	*Casuarina conversion.* (3)	*Fuel Plantation.* (4)	*Area for regeneration.* (5)	*Area for coupe working.* (6)	*Total area.* (7)	*Balance area left for protection working circle.* (8)
	ACS.	ACS.	ACS.	ACS.	ACS.	ACS.	ACS.
TIRUPPORUR RANGE.							
1 Illalur and Extension ..	866	..	..	..	691	691	175
2 Thaiyur	1,515	119	500	..	..	619	896
3 Kayar and Extension ..	1,109	438	..	..	..	438	671
4 Mambakkam and Extension.	1,278	411	..	..	..	411	868
5 Madayathur and Extensions I and II.	988	..	..	..	792	792	196
6 Sonalur and Extensions I and II.	1,365	90	100	..	1,099	1,289	76
7 Alathur and Extension I ..	704	..	..	..	681	681	24
8 Kattur and Extension ..	3,394	26	650	..	..	676	2,718
9 Thirukalikundram and Extension.	2,251	..	..	..	1,100	1,100	1,151
10 Oragadam and Extension ..	1,024	..	..	..	..	..	1,024
11 Kolathur and Extensions I, II and III.	1,866	200	..	..	1,666	1,866	..
12 Salur and Extension ..	949	..	300	175	..	475	474
13 Kalvey	72	..	..	..	..	..	72
14 Sirukundram A and Extension I.	1,049	..	..	..	..	..	1,049
15 Sirukundram B and Extension I.	441	..	..	..	..	..	441
16 Navalur	282	..	75	65	..	140	142
Total ..	19,153	1,284	1,625	240	6,029	9,178	9,977
SRIPERUMBUDUR RANGE.							
	ACS.	ACS.	ACS.	ACS.	ACS.	ACS.	ACS.
1 Mannur	553	553	..	..	..	553	..
2 Vadakupattu	710	..	..	..	509	509	201
3 Vattambakkam and Extension.	814	..	..	..	614	614	200
4 Kavanur	515	..	..	..	417	417	98
5 Nanmangalam and Extensions I and II.	676	..	..	..	..	..	676
6 Maduraipakkam	451	..	..	..	..	..	451
7 Kattankolathur and Extension I.	731	50	..	200	..	250	481
8 Kumili and Extension I ..	1,206	..	300	70	836	1,206	..
9 Vandalur and Extension ..	2,954	..	150	150	..	300	2,654
10 Maganiam	955	..	..	..	..	..	955
11 Nallur	903	..	..	..	..	..	903
12 Erumaiyur	170	..	..	..	..	..	170
13 Siruvanjur	504	..	..	..	..	..	504
14 Unamancheri	759	..	75	75	..	150	609
Total ..	11,901	603	525	495	2,376	3,999	7,902

Abstract statement of areas allotted to the protection working circle.

			Area included in					
Range. (1)	*Number of reserves.* (2)	*Total area.* (3)	*Casuarina Conversion Working Circle.* (4)	*Fuel Plantation Working Circle.* (5)	*Manure leaf regeneration.* (6)	*Manure leaf exploitation.* (7)	*Total of columns (4) to (7).* (8)	*Balance allotted to Protection. Working Circle.* (9)
		ACS.	ACS.	ACS.	ACS.	ACS.	ACS.	ACS.
Chingleput	18	20,043	702	445	300	1,384	2,831	17,212
Tirupporur	16	19,153	1,284	1,625	240	6,029	9,178	9,977
Sriperumbudur ..	14	11,901	603	525	495	2,376	3,999	7,902
Grand total ..	48	51,097	2,589	2,595	1,035	9,789	16,007	35,091

		ACS.
* Area of Casuarina Conversion Working Circle		2,953
Deduct—	ACS.	
Area of Maiyur R. L.	300	..
Nemali unreserves	65	
		365
Balance ..		2,587

199. *Character of the vegetation.*—The character of vegetation is described in Chapter II of Part I.

SECTION 2.—METHODS OF TREATMENT.

200. *General treatment.*—The reserved forests included in the working circle will be given complete rest from exploitation of any kind, except grazing of cattle, collection of grass and minor forest produce.

CHAPTER VIII.—MISCELLANEOUS REGULATIONS.

SECTION 1.—FIRE PROTECTION.

201. *General.*—So far as has been known, there were only nine fires in the Revenue district of Chingleput, which burnt grass and casuarina seedlings over about 135 acres of old casuarina plantations, during 1948. The reserved forests are generally immune to fire, owing to the thick growth of semi-evergreen shrubs, such as *Memecyclon edule*, *Maba buxifolia*, *Carissa spinarum*, *Webera corymbosa* and the absence of grass during the hot weather.

202. *Fire protection measures suggested.*—In December each year, the old casuarina plantations will be inspected by Range Officers and only such of those plantations which contain a fair growth of grass, and so are liable to be damaged by accidental fires may, at the discretion of the District Forest Officer, be protected by fire tracing the boundaries of the plantations, during March, to a width of six feet. Where two or more plantations are contiguous, it is enough if the periphery of the plantations is fire traced. During fire tracing operations, care should be taken to ensure that the fire does not escape into the plantation or into the general forests.

SECTION 2.—BUILDINGS.

203. There are no departmental buildings in the division except the Range Office Building at Tirukkoyilur. All the Range Offices except Tirukkoyilur Range Office and the District Forest Office, at Chingleput are located in private rented buildings.

204. Residential quarters for the subordinate staff are essential. It is suggested that the question should be reviewed by the territorial Conservator in 1954–55 with reference to the conditions then existing. The following buildings may be constructed from 1955–56 onwards :—

		RS.
1955–56 and 1956–57	District Forest Office at Chingleput	20,000
1957–58	Combined Range Office and quarters at Chingleput..	10,000
1958–59	Combined Range Office and quarters at Tiruporur	10,000
1959–60	Combined Range Office and quarters at Markanam	10,000
1960–61	Ranger's quarters only at Thirukkoyilur	6,000
1961–62	Combined Range Office and quarters at Sriperumbudur range at Vandalur or any other suitable localities	10,000

205. Foresters, Forest Guards and Forest Watchers are generally able to get suitable residential accommodation in villages adjoining the reserves. It is, however, desirable to provide them with departmentally constructed residential buildings for their accommodation so as to make them independent of obligations to villagefolk. It is, therefore, suggested that this question should be reviewed by the territorial Conservator about 1961–62. By that time, the future lines of work in the division, would have become established.

SECTION 3.—ROADS.

206. There are no roads in the division, except one motor road to the top of Vandalur Hill, built by the military. After the centres of future planting of casuarina and other fuel species, are decided upon, it is desirable to have cart-tracks branching from main roads and affording easy access to the planting centres. Such roads, which may be fair weather ones, can with advantage, be developed along the Reserve lines, wherever possible. It is therefore, suggested that the question be reviewed in 1954–55, by the territorial Conservator.

SECTION 4.—EXPERIMENTAL GARDEN.

207. Extensive areas of Panchayat Forests are being taken over for departmental management in most districts in the Province and the results of research experiment in Chingleput Division will be applicable to several other districts. It is, therefore, suggested that a research centre be opened in Chingleput revenue district in a suitable locality

(e.g. Gudalur or other reserve forest at the discretion of the Provincial silviculturist) under the direct supervision and control of the Provincial Silviculturist and experiments carried out over a minimum period of ten years, with regard to the following points :—

(i) Artificial introduction of casuarina, other fast growth fuel species and species suitable for exploitation of manure leaf in the plains portion of the reserved forests.

(ii) Afforestation of denuded hill slopes by the contour trench or other suitable methods.

SECTION 5.—TREATMENT OF OLD CASUARINA PLANTATIONS.

208. The casuarina plantations raised during the years 1944, 1945 and 1946 have generally not been successful, except those in the subjoined statement, which have been incorporated in the casuarina conversion working circle. The remaining plantations may be maintained until the rotation age of eight years and whatever growth of casuarina exists then will be clear-felled. No artificial regeneration is proposed in these areas.

Name of range.	*Name of reserved forest.*	*Year.*	*Area.*	*Total area of the plantations in each reserved forest.*
			ACS.	ACS.
Chingleput	Gudalur	1945	75	..
		1946A	49	..
		1946B	53	..
				177
	Senkundram	1946	75	75
				75
	Maiyur	1945	100	..
		1946	110	
				210
Sriperumbudur	Mannur	1945	51	..
		1946	50	..
				101
	Kottankolathur	1946A	50	50 (near railway line).
Thiruporur	Mambakkam	1944	54	
		1946	82·5	
				136·5
	Thaiyur	1944	54	..
		1945	22	
		1946	43	
				119
	Kattur	1946	26	26
	Kayar	1944	49	
		1946	89	
				138
	Nemali unreserve	1945	64·95	64·95
				1,091·45

SECTION 6.—BOUNDARIES OF RESERVES.

209. The boundaries of the reserved forests now under departmental control were checked with reference to section 16 notifications and copies of old Madras Survey Maps of eight inches to one mile scale, wherever available, with the following results :—

(i) *Vandalur reserved forest.*—Disafforestation notification No. 40, dated 17th February 1947 was issued. The area disreserved is not noted ; this may be 275 acres being the difference in area noticed. This has to be verified with the original file showing surveyed sketch of disafforested area. This area is probably the land lying to the south of Vandalur-Kelambakkam Road and which was disafforested and given to Harijans, who recently sold the land to the "Hindu ", Madras.

In a plan filed with section 16 notification maintained in the District Forest Office, the southernmost corner of the Reserved Forest is shown as disafforested. This area exists on the ground as Forest and there is a common boundary between Vandalur Reserved Forest and Kumili Reserved Forest probably the sketch is incorrect.

To the east of Karanai-Puducheri village, about 130 acres are said to have been disafforested in favour of the Harijans of the Gokulam Colony and part of the land is under cultivation. The reserve boundary has not yet been laid, excluding the disafforested area. The notification regarding disafforestation is not available in the District Forest Office.

(ii) *Gudalur reserved forest.*—The original area of the main reserved forest is 2,598·17 acres. Disafforestation Notification No. 244, dated 5th September 1923, has been issued. The area disafforested is not noted. Probably, it is 261 acres as the section 16 map shows 2,597 acres corrected into 2,337·17 acres.

In a second disafforestation Notification No. 354, dated 13th December 1924, 137 acres have been disafforested. Hence, corrected area now is 2,337·17 acres *minus* 137 acres = 2,200·17 acres.

(iii) *Senkundram reserved forest.*—The original area of Senkundram reserved forest and Extensions I and II were 1,284·64, 367 and 58·11 acres, respectively. Notification No. 93, dated 30th March 1923, disafforesting 14·75 acres from Senkundram Extension I and Notification No. 355, dated 13th December 1924, disafforesting 400 acres from Senkundram reserved forest were issued. The present areas of Senkundram and its two extensions are, therefore, 884·64, 352·25 and 58·11 acres, respectively. These figures tally with the areas transferred to Forest department from the Revenue department. The reserve is now in two separate bits owing to disafforestation in the middle. The northern bit adjoins the Gudalur Reserved forest with a common boundary for part of the distance.

(iv) *Tirukkalikundram reserved forest.*—The old district reference map furnishes the following areas :—

	Original area.	Corrected area.
Thirukkalikundram reserved forest	703·50	682·63
Tirukkalikundram Extension I	843·00	711·00
Tirukkalikundram Extension II	975·00	887·00
	2,521·50	2,280·63

The notification numbers in which an aggregate of 240·87 acres were disafforested are not traceable. As per records, the area actually transferred to the Forest department (the area of Tirukkalikundram reserve forest and extension), is only 2,251 acres and so, there is a difference of 29·63 acres. Probably, this represents another disafforestation.

(v) *Kavanur reserved forest.*—The original area of Kavanur reserved forest and extension comes to 532 *plus* 32 acres = 564 acres. But the area actually transferred to Forest department by the Revenue department is only 515 acres. Hence, there is a difference of 49 acres. This might have been disafforested. This has to be verified.

(vi) *Unamancheri reserved forest.*—Between Cairn Nos. 17 and 19, the villagers have encroached into the reserve by ploughing over a small bit of land. This encroachment has to be evicted.

(vii) *Kumili reserved forest.*—There is an encroachment between Cairn Nos. 67–68.

(viii) *Tirutheri reserved forest.*—Portions of the reserve have been disafforested between Cairn Nos. 54 and 65, 70 and 82, and 99 and 104. There are no regular cairns on the line between pillars 99 and 104.

(ix) *Sonalur reserved forest.*—The boundary line does not exist after Cairn No. 70. This should be laid now.

(x) *Mambakkam reserved forest.*—The line from Cairn Nos. 16 to 26 does not exist. This should be laid.

(xi) *Kattur reserved forest.*—The line from Cairn Nos. 28 to 35 does not exist. This should be laid.

(xii) *Tirukkalikundram reserved forest.*—There is an encroachment between Cairn Nos. 86 and 87.

SECTION 7.—RESERVATION OF RESERVED LANDS AND UNRESERVES.

210. Included in the division are 328 acres of Maiyur reserved land, 65 acres of Nemali unreserves, 81 acres of Vadapatnam unreserve and 37 acres of Kodapatnam unreserve. The Maiyur casuarina plantations and the Nemali unreserve casuarina plantations have come up successfully and it is desirable that these lands should be retained permanently under the control of the Forest department. It is, therefore, suggested that this unreserve be got notified under section 16 of the Madras Forest Act. As regards the Vadapatnam and Kodapatnam unreserves, it is suggested that the land together with the plantations thereon be continued under the control of the Forest department.

CHAPTER IX.—WORKING PLAN FOR PANCHAYAT RESERVES IN CHINGLEPUT DISTRICT NOW UNDER THE MANAGEMENT OF PANCHAYATS, WHEN THEY ARE RESUMED FOR MANAGEMENT BY THE FOREST DEPARTMENT.

211. In Chingleput Revenue district, the following ten reserved forests with an aggregate area of 6,179 acres are still under the management of forest panchayats working under the control of the Revenue department :—

Taluk.	*Serial number and name of reserved forest.*	*Area in acres.*	*Remarks.*
Saidapet	1 Thandarai and Extension	828	These are under the occupation of the military authorities (Base Ordnance Depot, Avadi).
	2 Mittanamalli	236	
	3 Kovilpadugai and Extensions I and II.	772	
Sriperumbudur	4 Tirumalavoyal and Extensions I and II.	534	
Chingleput	5 Appur and Extension	1,883	This is the Governor's shooting reserved forest.
Sriperumbudur	6 Pudupperi	359	Low shrub and thorny growth only.
Madurantakam	7 Acharapakkam	1,017	A hill area with no appreciable growth.
Saidapet	8 Pulikaradu	185	There is no growth ; can be used for quarrying metal and gravel.
	9 Tambaram	251	
	10 Perumbakkam	114	Low shrub and thorny growth only.

212. These reserved forests were inspected with a view to study the effect of the panchayat management on co-operative basis. Owing to the bad management by the panchayats, the forests have been reduced to thorny scrub growth rarely exceeding 3 feet to 4 feet in height. Everywhere signs of felling the existing thorny bushes are noticed. The present degraded condition of the forest is mainly due to illicit felling and hacking for fuel, manure leaves and thorns.

It was also observed that the cattle population is greater than the grazing capacity fixed for the reserved forest, in the surrounding villages. The reserves have been overgrazed. Signs of goat browsing were also noticed in the reserved forests. There is no doubt that the deterioration of the forests is partly due to uncontrolled grazing and illicit browsing of goats.

213. The panchayatdars and the local villagers, who were consulted, were agreeable to the taking over of the panchayat forests by the Forest department. They are averse to the continuance of the present panchayat system under any condition.

214. *Character of vegetation.*—The growing stock in these forests is similar to that described in paragraph 28 of Part I of the Working Plan. The predominant species are *Acacia leucophlœa, Dichrostachys cinera, Zizyphus xylopyra, Zizyphusœnoplia, Carissa spinarum, Maba buxifolia, Randia dumometorum, Memecyclon edule, Dodonea viscosa, Cassia auriculata*, etc. *Euphorbia tirucalli* is found almost everywhere.

The soil generally met with is loamy to gravelly and inhospitable.

215. *Method of treatment.*—When these forests are resumed by the Forest department for management, they may be formed into beats and added on to the existing Chingleput and Sriperumbudur Ranges as noted below :—

Chingleput Range	(1) Acharapakkam and (2) Appur reserved forests.	One beat. To be added to the existing Kottankolathur beat.
Sriperumbudur	Tambaram, Pulikaradu and Perumbakkam.	One beat with headquarters at Tambaram.
	Puduperi	To be added to the existing Nallur beat.
	Thandarai, Mittanamalli, Koilpadugai and Tirumalavoyal.	One beat with headquarters at Avadi.

216. These forests will be placed under strict protection. There will be no exploitation of any kind except that grazing will be allowed on permits to the cattle of the surrounding villages. The grazing capacity of the forests will be calculated at the rate of three acres per cow unit.

SOUTH ARCOT REVENUE DISTRICT.

Future management discussed and prescribed.

CHAPTER X.—BASIS OF PROPOSALS.

SECTION 1.—GENERAL OBJECTS OF MANAGEMENT.

217. *General.*—This working plan deals with the reserved forests within the South Arcot Revenue district included in the Chingleput Forest Division. These forests were under departmental control until 1925, when they were handed over to the Revenue department for management under panchayats.

The Chingleput Forest Division was formed with effect from 16th July 1945 with the definite idea of taking back the panchayat managed reserves to departmental control as it was found, that during the period from 1925 to 1945 when the forests were managed by the panchayats, they deteriorated to a great extent as a result of continued maladministration.

218. *Objects.*—The objects of management are, in consequence, various and may be summarized as follows :—

(*a*) Protection and conservation of the forests by enforcing rigid protection as they are now in a highly degraded condition.

(*b*) To exploit the forests for fuel, minor forest produce and manure leaves (with due regard to silvicultural principles) to a limited extent wherever such exploitation is possible.

(*c*) To supply, conformably with strict principles of conservancy, the agricultural, pastoral and domestic needs of the surrounding population without putting an undue strain on the forests which are now in a degraded condition.

(*d*) Improvement of the quality of the forests as quickly as practicable by regenerating them in as inexpensive a manner as possible, without sacrificing results, with more valuable and useful species such as casuarina, *Prosopis juliflora, Inga dulce*, etc.

(*e*) To conserve the forests on the low hills and denuded slopes and protect them in the interests of water-supply and agriculture.

SECTION 2.—METHODS OF TREATMENT ADOPTED.

219. *Methods.*—(1) Conversion of the existing degraded deciduous forests into valuable plantations of casuarina ;

(2) clear-felling the existing tree-growth in suitable localities and planting with fast-growing fuel species ;

(3) clear-felling at the end of the rotation the existing casuarina plantations and re-planting with casuarina ;

(4) supply of manure leaf from the forests to the agricultural population under the permit system ;

(5) planting in suitable localities manure leaf-yielding species ; and

(6) providing grazing and improving the watering facilities in the forests for the local cattle.

SECTION 3.—WORKING CIRCLES, THEIR AREAS AND DISTRIBUTION AND REASONS FOR CONSTITUTION.

220. Six working circles have been formed as shown below in pursuance of the objects of the management :—

Working circle.		*Distribution.*		
Serial number and name.	*Extent.*	*Range.*	*Reserved forests.*	*Remarks.*
	ACS.			
1 Casuarina Conversion Working Circle.	1,010	Markanam ..	Markanam, Agaram and Pichavaram.	For conversion of the areas into casuarina plantations.
2 Fuel Working Circle ..	4,210	Markanam and Tirukkoyilur.	Athipakkam, Pichavaram and Kille.	For extraction of fuel and natural regeneration.
3 Manure-leaf Working Circle.	1,070	Tirukkoyilur ..	Athipakkam	For supply of manure leaf to the ryots.
4 Grazing Working Circle.	Entire area.	Markanam and Tirukkoyilur.	All the reserved forests in the two ranges, with the exception of certain specified areas as defined in paragraph 312.	For grazing.
5 Minor Forest Produce Working Circle.	Do.	Do.	All the reserved forests and unreserved lands in the two ranges.	For collection of minor forest produce as detailed in paragraph 308.
6 Protection Working Circle.	4,085	Do.	All the reserved forests in the two ranges not included in any of the Working Circles except minor forest produce and grazing working circle.	For rigid protection.

SECTION 4.—PERIOD OF THE WORKING PLAN.

221. This working plan will be in force for a period of fifteen years, from the 1st of April 1949.

CHAPTER XI.—WORKING PLAN FOR THE CASUARINA CONVERSION WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION OF THE WORKING CIRCLE AND CHARACTER OF THE VEGETATION.

222. The Casuarina Conversion Working Circle includes suitable selected areas in Markanam, Agaram, Kille and Pichavaram reserved forests, which now support a degraded type of deciduous tree-growth, fit for growing casuarina.

223. The original home of casuarina (*casuarina equistifolia*) is reported to be Persia, from where it was introduced into Northern Australia and Malay islands. This species would appear to have been introduced into India from these countries about ninety years ago.

224. Casuarina is not of much value as a timber tree but small poles are much in demand. It is an excellent fuel, which burns well even when partly green. In a given time, it produces a large volume of wood, hardly reached by any other species in the locality suited to it. Due to this fact and due to the ease with which it can be raised artificially, it has spread rapidly all over Southern India.

225. Casuarina plantations have been raised over an aggregate area of 463 acres in the abovementioned reserved forests in 1945–46, 1946–47 and 1947–48. These plantations as well as an older casuarina plantation of five acres in Kille reserved forest have been included in the working circle.

226. *Character of vegetation.*—The fresh areas selected for planting casuarina at present support a degraded type of forest containing deciduous and thorny species such as.—

(1) *Memecylonedule*, (2) *Maba buxifolia*, (3) *Randia dumetorum*, (4) *Cassia spinarum*, and (5) *Webera corymbosa.*

The soils met with fall into two distinct types, viz., (*a*) red loam and (*b*) sandy loam. Wherever such soils do not have a rocky substructure above three feet from below, the ground has been selected for casuarina plantation.

227. *Area.*—The working circle has an aggregate area of 1,010 acres.

228. *Division into planting series.*—The working circle will have two planting series called the Markanam Range Planting Series and the Tirukkoyilur Range Planting Series.

Serial number and name of felling series.	Name of reserved forest.	Working circles area.	Total area of the felling series.
		ACS.	ACS.
1 Markanam Range	Markanam	110	816
	Agaram	706	
2 Tirukkoyilur Range	Kille (part)	159	194
	Pichavaram (part)	35	
		Total ..	1,010

229. The total area of the working circle, viz., 1,010 acres, comprises of 468 of existing casuarina plantations and 642 acres of scrub forest selected for future planting. The latter area has not been surveyed and the extent noted in this working plan does not claim to be accurate.

230. The following statement shows the details of areas to be planted each year in each planting series :—

Year.	Name of reserved forest.	Area to be planted in each reserved forest.	Total area to be planted in the year.	Remarks.
(1)	(2)	(3)	(4)	(5)
		ACS.	ACS.	
	Markanam Range Planting Series.			
1949–50	Agaram ..	100	100	Scrub forest area.
1950–51	Do. ..	100	100	Do.
1951–52	Do. ..	100	100	Do.
1952–53	Do. ..	100	100	Do.
1953–54	Do. ..	92	92	Do.

Year. (1)	Name of reserved forest. (2)	Area to be planted in each reserved forest. (3) ACS.	Total area to be planted in the year. (4) ACS.	Remarks. (5)
	Markanam Range	*Planting*	*Series—cont..*	
1954–55	Agaram Markanam	53 49	102	Plantations of 1945–46.
1955–56	Agaram Markanam	61 61	122	Plantations of 1946–47.
1956–57	Agaram	100	100	Plantations of 1947–48.
1957–58	Do.	100	100	Plantations of 1948–49.
1958–59	Do.	100	100	Plantations of 1949–50.
1959–60	Do.	100	100	Plantations of 1950–51.
1960–61	Do.	100	100	Plantations of 1951–52.
1961–62	Do.	100	100	Plantations of 1952–53.
1962–63	Do.	92	92	Plantations of 1953–54.
1963–64	Agaram Markanam	53 49	102	Plantations of 1954–55.
	Tirukkoyilur Range Planting Series.			
1949–50	..	..	..	No planting.
1950–51	Kille	50	50	Non-casuarina area.
1951–52 to 1953–54.	..	..	..	No planting.
1954–55	Kille	53	53	Old plantation of five acres and 1945–46 plantation of 48 acres.
1955–56	Do.	56	56	Plantation of 1946–47.
1956–57	Pichavaram	35	35	Plantation of 1947–48.
1957–58	..	..	..	No planting.
1958–59	..	..	..	Do.
1959–60	Kille	50	50	Plantation of 1950–51.
1960–61 1961–62 1962–63	..	..	..	No planting.
1963–64	Kille	53	53	Plantation of 1954–55.

SECTION 2.—METHOD OF TREATMENT.

231. *System.*—The Silvicultural System will be clear-felling and planting with casuarina.

232. *Rotation.*—The correct rotation for casuarina plantation is the age at which the mean annual increment culminates. This corresponds to the rotation of maximum volume production and, as there is no price increment with size of fuel, it is also the financial rotation. As we are primarily concerned with augmenting the depleted fuel resources of the district, we should prefer the rotation of maximum volume production even if this should happen to be less than the financial rotation. As the oldest plantation in this district is barely three years old, it is not possible to take measurements of the rate of growth of the casuarina trees and crops and work out the age at which the mean annual increment culminates.

233. The rotation has been fixed at seven years for the Nellore Division where the rate of growth is expected to be higher. Private tope owners in Chingleput and South Arcot districts, fell casuarina about six to ten years after planting.

234. The rotation is, therefore, fixed empirically at eight years. The rotation may, however, be increased to ten years if the rate of growth during the currency of this working plan is found to warrant it.

235. *Espacement.*—An espacement of six feet into six feet will be adopted.

236. *Preparation of the area.*—The growth on the annual area will be clear-felled in April. If the felled material is saleable, it should be sold with a time-limit for its removal before the end of April. Otherwise, the un saleable material should be evenly spread over the area and burnt. The area will then be ploughed with a bull dozer tractor.

This operation has the effect of uprooting the stumps and roots and making the soil soft to a depth of about nine inches. (If bulldozer is not available for hire with the Agricultural Department, the operation will be carried out by manual labour. In this case, not only will the local labour be insufficient to tackle large areas, but the cost of the operation also will be considerably higher.) The bulldozer leaves the worked-up soil in big heaps all over the area. The area will, therefore, be levelled up using manual labour after the bulldozer vacates the area. It is also desirable to put contour bunds of two feet width and one and half feet high, at intervals of two or three chains, in order to prevent the rapid flow of rain water and to make the rain water soak into the soil.

237. *Silvicultural requirements of casuarina.*—Casuarina is a strong light demander and grows very fast. As it is easily suppressed, it needs pruning and fairly heavy thinning. Otherwise, it tends to become stunted and branchy. Although casuarina is grown on a wide range of soils varying from pure sands on the sea-board to inland sandy loam and red loamy soils, at least 3 feet in depth, it is known to grow best on fine silvery sands of sea coast coupled with a low water table, i.e., at not greater than six feet depth from the ground-level in the hottest part of the year. It does not thrive on heavy soils and suffers from drought on coarse sands and when the water table is too low.

The fine long roots of the plant enables it to draw moisture from a wide range of apparently dry sand.

Casuarina obtains its nitrogen from the air with the help of certain symbiotic bacteria living in nodules in the root.

238. *Artificial regeneration of casuarina.*—Casuarina flowers and fruits twice a year in the months of January and June. The cones usually burst in October-November. They may be collected just before they burst from healthy mother trees at least eight years old. Ripe cone is distinguished from unripe one by its brownish colour. The seeds do not retain their fertility for more than a few months. The cones, which are collected, should be carefully dried on dry floor. As the seeds are liable to be easily blown away by winds, the usual method of drying the seeds is to spread a cloth over a country cot and on it to spread the cones and cover them with another cloth weighted down at the corners and put out the cot in the sun. Seeds that should burst from the cones on the first or second day of exposure to sunlight are considered fertile. Ants are very fond of casuarina seeds. The seeds should be protected against ants by spraying ash all round the cot. Keatings powder may also be used for keeping ants off. After drying the seeds, they are usually preserved in earthen pots, taking care to close the mouths of the pots tightly to prevent ants from getting in and eating them. About 20,000 seeds go to weigh an ounce.

239. *Nursery.*—According to the area to be planted, one or more nurseries will be eatablished at a convenient place near the middle of each year's area to be planted, in December. The area will be strongly fenced all round. A well will be dug in the middle of the site. The nursery site selected should, as far as possible, be free from white ants. The usual practice is to plough the site several times after rains of the south-west monsoon have stopped and manure it by penning sheep. Goat manure or farm-yard manure is not generally used for casuarina nurseries. The area is then hoed to a depth of nine inches, mixing the droppings of sheep well into the soil. Beds are then formed 40 feet × 4 feet and about nine inches high, radiating from the well in the centre with a three feet wide path or gangway between beds. After hoeing, the beds are tamped with hands till a fairly firm surface is obtained. Seeds of casuarina are then sown broadcast uniformly at the rate of about one pound of seeds per bed. After sowing, fine sand or ash is sprinkled over the seeds through a bamboo sieve just enough to cover the seeds. After completing the sowing, the beds will be profusely watered by means of a watering can fitted with a fine rope. Watering will be done both in the morning and evening for about three weeks till the seedlings are about one inch high. It takes about a fortnight for the seeds to germinate. If there is an attack of red-ants which carry the seeds away, copper sulphate at the rate of one tola in two seers of water may be dissolved and sprinkled over the beds. The seedlings develop rapidly and reach a height of about two feet by the following October and develop a tap root of about one to one and half feet.

240. *Tending in nurseries.*—Nurseries should always be kept clear of all weeds. There should be no disturbance of the young seedlings while removing the weeds. Congested patches will be thinned out by prickling out the weaker seedlings and transplanting them in a new bed. The seedlings, which are allowed to grow in the original bed, should be encouraged to develop as big a tap root as it can before the time comes for planting. When taking the seedlings from the nursery bed, they should *not* be pulled out of the beds. The correct thing to do is to water the beds profusely and then dig out the plants.

241. *Number of plants in a standard bed of 40 feet into 4 feet.*—From a bed of 40 feet into 4 feet, about 3,000 plants may be expected for transplanting. Careful calculation is necessary to see that there are sufficient plants for replacing casualties.

242. *Planting.*—Pits of one-foot cube will be dug at an espacement of 6 feet into 6 feet in July–August, after a good rain has fallen. In the months of September–November, after the north-east monsoon has set in, the soil excavated from the pits shall be thrown back into the pits. Healthy casuarina seedlings with a shoot of not less than 18 inches and root of not less than 12 inches will be planted in the pit, in a hole made in the pit.

243. The following details should be observed in pricking out the seedlings from the nursery :—

(1) the nursery seedlings, which should be about seven months old, will be dug up from the nursery as shortly before planting as possible ; and

(2) the fine particles of soil adhering to the roots should not be shaken off.

244. In planting a seedling in loose soil, its tap root is held in the pit at the proper depth, without being bent, and the soil is thrown in from all sides. The soil should be moist at the time of planting. It should be well pressed round the roots, without leaving air spaces. The planting will be completed as quickly as possible after it is commenced.

245. *Watering.*—Watering is the most expensive item in raining a casuarina plantation. The extent to which watering is required depends on seasonal variations and on the condition of the plantation. The object of watering is not only to keep the plants alive but also to accelerate growth during infancy. No hard and fast rule can, therefore, be laid down with regard to watering the plants. Watering will be done judiciously and when necessary, but not mechanically. It should be organized carefully and properly supervised.

246. The plants will be watered for ten days after planting, at the rate of half a potful (equal to one gallon) both in the morning and evening, unless there is rain. For the next ten days, the plants will be watered on every alternate evening. By this time, the seedlings are expected to establish themselves. After this, the plants will be watered twice a week or more often, if found necessary, as a result of break in the rains, if it should happen. More often than not, no watering may be required after the first month of planting till the end of the rainy season and the beginning of the first long summer drought.

Watering will be done whenever soil is found to be dry, after digging the soil for about six inches and if plants are withering.

247. *First summer after planting.*—The first summer after planting is the most critical stage in the life of a casuarina plantation. When long periods of drought occur, the smaller plants which will not have sent down a sufficiently long tap-root to reach the summer water-table, begin to die in large numbers.

248. *Replacement of casualties.*—All casualties will be replaced in the first year as soon as they are noticed. The replacement of casualties will be done from the seedlings that may be left in the nursery for the purpose.

Plants should be allowed to establish themselves quickly and uniformly all over the planted area. Plants that establish themselves without the tips of the leading shoots withering grow vigorously and well. Those plants whose tips wither away become bushy and branchy. As soon as tips are seen withering, a second seedling should be planted by the side of the withering plant. In filling up the casualties, specially strong and vigour seedlings will be selected, so that they may not lag behind and suffer from the shade of the neighbouring trees. Normally, there should be full stocking at the beginning of the first summer in the April following.

249. *Tending.*—Two weedings will be done in October–December, for a radius of 18 inches round the plants. After the close of the north-east monsoon in January, the plants will be given a thorough soil working for a radius of 18 inches and a depth of 6 inches.

250. *Pruning.*—Free circulation of air is essential for the proper development of casuarina. Depending on the rate of growth of the plants, pruning will be done in the fourth or fifth year of the plants require it. At the same time, all dead and dying trees will be extracted.

251. The following general instructions should be followed in pruning :—

(1) Plants about 3 feet and below in height should not be pruned, but should be left as they are, for pruning in the fifth year.

(2) Plants above 3 feet but below 9 inches in height and about 3 inches in girth will be pruned to a height of about 3 feet taking care to leave enough crown for the plants to develop.

(3) Plants above 6 feet in height and 3 inches in girth will be pruned up to a height of 9 feet.

(4) A sharp knife should be used for pruning and care should be taken not to injure the bark of the stem.

(5) The branches pruned will be cut about one inch away from the stem.

(6) Dead stems will also be removed by the coolies who do the pruning.

(7) Where there are two or more plants at one pit, the best of them will be retained and pruned and others will be cut flush with the ground.

(8) The work will be taken up during November. It will be done departmentally, under the close supervision of the Range Officer. The pruned material will be sold in auction, after it is stacked by the pruning coolies. It is expected that the revenue obtained from the sale of pruned material will cover the cost of pruning.

252. *Thinning.*—Casuarina is a strong light demander. It is sensitive to suppression. Close planting results not only in loss of height growth but also in girth, unless thinned early. If in the opinion of the District Forest Officer, thinning should be considered necessary, it will be done departmentally. The produce obtained by the thinnings should be sold in auction. All dead, dying, suppressed, to-broken, forked and mis-shapen trees to be marked and thinned.

253. *Final fellings.*—The following statement shows details of casuarina plantation, which should be finally felled :—

	Markanam Range Series.			*Tirukoilur Range Series.*		
Year of felling. (1)	*Plantation.* (2)	*Area.* (3)	*Total area to be felled in the year.* (4)	*Plantation.* (5)	*Area.* (6)	*Total area to be felled in the year.* (7)
		ACS.	ACS.		ACS.	ACS.
1953–54	Agaram Reserved Forest, 1945 plantation	53	..	Kille Reserved Forest, old plantation	5	..
	Markanam Reserved Forest, 1945 plantation	49	102	Kille Reserved Forest, 1945 plantation	48	53
1954–55	Agaram Reserved Forest, 1946 plantation	61				
	Markanam Reserved Forest, 1946 plantation	61	122	Kille Reserved Forest, 1946 plantation	56	56
1955–56	Agaram Reserved Forest, 1947 plantation	100	100	Pichavaram Reserved Forest, 1947 plantation	35	35
1956–57	Agaram Reserved Forest, 1948 plantation	100	100	....	..	..
1957–58	Agaram Reserved Forest, 1949 plantation	100	100	....	..	..
1958–59	Agaram Reserved Forest, 1950 plantation	100	100	Kille Reserved Forest, 1950 plantation	50	50
1959–60	Agaram Reserved Forest, 1951 plantation	100	100	....	..	..
1960–61	Agaram Reserved Forest, 1952 plantation	100	100	....	..	..
1961–62	Agaram Reserved Forest, 1953 plantation	92	92	Kille Reserved Forest, 1954 plantation	53	53
1962–63	Agaram Reserved Forest, 1954 plantation	53	..			
	Markanam Reserved Forest, 1954 plantation	49	102	Kille Reserved Forest, 1955 plantation	56	56
1963–64	Agaram Reserved Forest, 1955 plantation	61	..			
	Markanam Reserved Forest, 1955 plantation	61	122	Pichavaram Reserved Forest, 1956 plantation	35	35
1964–65	Agaram Reserved Forest, 1956 plantation	100	100	....	..	..

254. *Agency of fellings.*—The casuarina plantation due for final felling will be sold in public auction in February, with lease period for the following financial year. In the case of small sized plantations to be raised in 1949–50 to 1952–53, the District Forest Officer, should fix a reasonably shorter period of lease. As each plantation will have been previously demarcated at the time of planting, no fresh demarcation is called for before sale. However, care should be taken to correctly survey the plantation before sale and note the surveyed area in the sale notice.

255. *Felling rules.*—As the area felled in any year will have to be replanted with casuarina in the following year, the following felling rules should be rigidly enforced :—

(1) The entire standing growth will have to be uprooted to a depth of not less than 12 inches and then billetted into 2 feet billets and stacked in stacks of 9 feet into 3 feet into 3 feet.

(2) The area should be throughly levelled at the end of the felling so as to cover all extraction pits and facilitate planting subsequently.

256. *Fencing.*—During the first year casuarina is susceptible to damage by browsing of cattle. Hence, special military wire fencing should be used if available. Otherwise, a trench and mound fencing should be done and *Euphorbia tirucalli* and *Jatropha curcass* should be planted on the bunds to form a live fence. Seeds of *Prosopis juliflora* should also be sown in patches, 3 feet apart, on the bund so as to form an impenetrable live fence.

257. *Wells.*—Wells will be dug at the rate of one well for every three acres. Water is available from 6 to 10 feet below ground level. The top diameter of the well may be about 15 feet and the bottom diameter 6 feet. Well rings consisting of casuarina twigs and branches, suitably bundled up, may be used so as to secure enough depth of water.

SECTION 3.—MISCELLANEOUS REGULATIONS.

258. *Demarcation.*—Plantations will be demarcated by plantation stones, showing the area and the year of planting at all prominent corners.

259. *Grazing.*—Plantations will be closed to grazing for three years including the year of planting.

260. *Fungus.*—As a precautionary measure, all dead and dying trees in the plantations will be extracted as speedily as possible. The working up of the soil at the end of the rotation will, to a certain extent, minimise fungus attacks.

261. *Statistics.*—Figures of yield, and costs of plantation should be accurately maintained.

262. *Rain gauges.*—It is desirable to have exact statistics about the number of rainy days and the quantity of rainfall, in inches, in each of the coupes taken up for artificial regeneration, during the years when they are regenerated. It is therefore suggested that Planter's rain guages may be installed in the centre of each of the coupes under artificial regeneration during the period, 1st July to 30th June following. The information about rainfall should be recorded in the Plantation Journals and Ledger.

263. *Control.*—The following control records shall be maintained by the District Forest Officer. The forms for the control records are given in Appendix IV.

(1) Control book showing separately control of felling and control of planting.
(2) Record of Works.
(3) Plantation Journal and Ledger.
(4) Nursery Journal and Ledger.
(5) Control Journal.
(6) Control map.

CHAPTER XII.—WORKING PLAN FOR THE FUEL WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION AND CHARACTER OF VEGETATION.

264. *General constitution of the Working Circle.*—The fuel working circle comprises of the selected areas of reserved forests in the vicinity of certain towns and villages where the demand for firewoods exists.

265. *Area.*—The aggregate area of the working circle is 4,210 acres.

266. *Felling series.*—The working circle is divided into three felling series, which are shown in the following statement :—

Range.	Felling series.	Reserved forests.	Area in acres.
(1)	(2)	(3)	(4)
1 Tirukkoyilur	Athipakkam, North	Athipakkam (part)	1,210
2 Do.	Athipakkam, South	Athipakkam (part)	1,850
3 Markanam	Pichavaram	Pichavaram (part) (1,100 acres) Kille (part) (50 acres)	1,150

267. *Character of vegetation.*—The type of forests included in the working circle in dry deciduous scrub in Athipakkam reserved forest and mangrove in Pichavaram and Kille reserved forests. Athipakkam reserved forest contains traces of its having once supported species like *Albizzia amara*, *Anogeissus latifolia*, *Pterocarpus marsupium*, *Acacia sundra*, *Acacia leucophloea*, *Dichrostachys cinerea*, *Cleistanthus collingus*, *Terminalia belerica*, *Fugenia jambolana*, etc. Due to the mismanagement of this reserved forest during the period it was under the panchayat management, many of these valuable species have disappeared and the ground is now covered mostly by thorny bushes like *Carissa spinarum*, *Maba buxifolia*, *Zizyphus exlopyra*, *Memecylon edule*, etc. Pitchavaram and Kille reserved forests contain chiefly mangrove species. The vegetation in these two reserved forests is more fully described in paragraph 30 of Part I in this Working Plan.

The soil in Athipakkam reserved forest is loamy to gravelly.

The soil in Pitchavaram and Kille reserved forests which are tidal forests is silted alluvium subjected to inundation of saline water.

268. *Rotation.*—The existing growing stock in the working circle is so inferior and degraded, due to the devastating influence to which the reserved forests have been subjected to during the long period of the panchayat management, it is not possible to fix a rotation for the existing stand. However, a rotation of 40 year is empirically fixed, subject to its revision at the time of the next revision of this working plan, having regard to the nature of the growth through coppice regeneration of the clear-felled coupes under the prescriptions of this working plan.

SECTION 2.—METHOD OF TREATMENT.

269. The method of felling proposed for fuel coupes is simple coppice, with the reservation of *Tamarind*, *Buchanania latifolia*, *Feronia elephantum*, *Sapindus emarginatus* and other minor forest produce yielding trees, which may, from time to time, be added to the list of trees to be reserved with the sanction of the Conservator of Forests.

270. *Regulation of working.*—The felling will be regulated by area. Each felling series has been divided into 40 coupes. The coupes have been marked in the maps accompanying this working plan. Well in advance of the sale of the coupes, they will be surveyed and demarcated by 15 feet wide cut lines except where natural features form the boundary. The correct area of the coupes to be sold will be computed on the basis of their survey and such surveyed areas only should be entered in the sale notice of the fuel coupes. Unless departure from the boundaries of the coupes as indicated in the working plan maps is involved on account of any unforeseen difficulties on the ground, differences between the nominal area of the coupe and its surveyed area will not constitute a deviation requiring sanction.

271. One coupe in each felling series will be offered for felling each year in the sequence indicated in the tabular statement of fellings, which does not indicate, however, the particular years in which the coupes are to be felled. If, for any reason, a coupe cannot be worked in any year, no deviation is involved ; but the fact that the coupe cannot be worked and the reasons therefore should be recorded in the Control Book.

SECTION 3.—METHOD OF EXECUTING FELLINGS.

272. Each coupe will be divided under the orders of the District Forest Officer, into a convenient number of strips on the ground by means of 10 feet wide cut lines. There shall be not less than two strips nor more than four strips in a coupe. In coupes situated on hill slopes, the strips shall invariably run across the contours, so that the strip lines will be perpendicular, or nearly so, to the contour lines. The arrangement of strips should normally be such that the last strip adjoins the next coupe. The felling of " indicator areas " is not prescribed.

273. *Agency of fellings.*—The fellings shall invariably be made through the agency of contractors. If a coupe cannot be sold in any year, it shall not be worked ; fellings on permit or departmental fellings shall not be resorted to in such cases.

274. The coupes shall be sold in public auction every year. The lease period shall be from 1st April to 31st March of the following year.

Coupes left unsold in public auction sale, but sold subsequently in special sale or on tender should be leased only for the period ending 31st March of the corresponding financial year.

275. *Coupe arrears.*—In the event of any portion of coupe remaining unfelled at the close of the lease period, such unfelled portion will be surveyed and the area computed. The District Forest Officer will then endeavour to get the contractor of the current year's coupe to purchase this unfelled portion. If the contractor purchases the unfelled portion, it must be worked as early as possible and the contractor must not be allowed to commence working in the second strip of his normal coupe until he has completed the arrear area mentioned above, to the satisfaction of the Range Officer. In cases, however, where the District Forest Officer is satisfied that the unfelled arrear coupe contains very poor growth, or is very difficult to work, or is for any other reason inexpedient to clear fells, he may depart from this rule. In such cases, the reasons for the deviation should be recorded in the Control Book.

276. *Felling rules.*—(i) The coupe shall be felled strip by strip. Fellings in one strip shall be completed and passed as satisfactory by the Range Officer after his personal inspection before the contractor is allowed to commence felling in the next strip.

(ii) All fellings in the coupe shall be made only by coolies of the concerned coupe contractor, who or whose authorized agent shall be present during the fellings.

(iii) All tree growth except tamarind, *Buchanania latifolia*, *Feronia elephantum*, *Sapindus emarginatus* and such other minor forest produce yielding trees as many, from time to time, be added to the list of species to be reserved, shall be felled to a height not exceeding 6 inches from the ground.

(iv) The District Forest Officer should endeavour to get contractors to cut back to ground level all thorny climbers and shrubs such as *Pterolobium indicum*, *Acacia intsia*, *Acacia pennata*, *Randia dumetorum*, etc.

(v) The cutting of the trees must be close to the ground. The bark must not be separated from the woody portion of the stool. Sharp axes and bill-hooks shall be used in the felling of the trees.

(vi) Any brushwood of the felled trees should not be allowed in the coupe in such a manner to so cover the felled stools as to obstruct the coppice shoots coming from the stools.

277. *Disposal of felled material.*—All felled firewood shall, prior to its removal from the coupe, be billetted and stacked. The stacks should preferably be of standard size in all coupes and the dimensions, 5 feet by 4 feet by 2½ feet making up of 50 stacked cubic feet, are recommended. Removal of firewood by any one before stacking shall not be permitted. The above condition does not apply to the removal of brushwood by headloads on permit.

278. Trees yielding timber shall, on felling, be hammer marked by the concerned beat forest guard before removal. If the timber trees are sawn or otherwise converted in situ, the sawn or converted pieces shall be so hammer marked.

SECTION 4.—TABULAR STATEMENT OF FELLINGS.

279. The sequence of fellings in the various felling series is shown in the following statement, in which is given details of coupes to cover the whole period of rotation of 30 years :—

Coupe number.	Athipakkam north felling series.	Athipakkam south felling series.	Pichavaram felling series.
	ACS.	ACS.	ACS.
I	30	46	28
II	30	46	28
III	30	46	28
IV	30	46	28
V	30	46	25 in Kille reserved forest.
VI	30	46	25 in Kille reserved forest.
VII	30	46	32
VIII	30	46	32

Coupe number.	Athipakkam north felling series.	Athipakkam south felling series.	Pichavaram felling series.
	ACS.	ACS.	ACS.
IX	30	46	32
X	30	46	32
XI	30	46	32
XII	30	46	32
XIII	30	46	32
XIV	30	46	32
XV	30	46	32
XVI	30	46	32
XVII	30	46	32
XVIII	30	46	32
XIX	30	46	32
XX	30	46	24
XXI	30	46	28
XXII	30	46	24
XXIII	30	46	28
XXIV	30	46	28
XXV	30	46	24
XXVI	30	46	28
XXVII	30	46	28
XXVIII	30	46	28
XXIX	30	46	28
XXX	30	46	24
XXXI	30	46	24
XXXII	30	46	36
XXXIII	30	46	30
XXXIV	30	46	28
XXXV	30	46	32
XXXVI	30	46	32
XXXVII	30	46	34
XXXVIII	30	46	38
XXXIX	30	51	40
XL	30	51	28
Total ..	1,210	1,850	1,150

SECTION 5.—REGENERATION.

280. No artificial regeneration will be undertaken in the felled fuel coupes. Regeneration in these coupes will be from coppice regrowth in Athipakkam reserved forest and from seeds in Pichavaram and Kille reserved forests, which are of the mangrove type.

SECTION 6.—OTHER REGULATIONS.

281. *Demarcation of worked coupes.*—Soon after the completion of fellings in a coupe, the corners of the coupe will be demarcated with stone slabs, which will show the coupe number and the year of its working.

282. *Grazing regulations.*—The felled fuel coupes shall remain closed to grazing for four years including the year of felling.

Where cattle have to pass through any such closed coupe, the cattle path in such coupe shall be demarcated with a margin on either side, half-a-chain wide and the path excluded from the closure.

Cutting and removal of grass from the 'closed' coupes may be allowed free of cost.

283. *Fire protection.*—No special measures of fire protection will be necessary for the working circle.

284. *Record of statistics.*—Every contractor shall be required to submit to the Range Officer monthly statement of yield of firewood and timber, if any, from his coupe not later than the 15th of the following month. Such statement shall show particulars of (1) the number of stacks felled during the month, (2) the number of stacks removed during the month and (3) the balance number of stacks not removed. The quantity of fuel removed on head load tickets should also be furnished in the appropriate column of the statement. In the case of timber, if any, the information as regards species and quantity in cubic feet shall be furnished in the respective columns of the statement.

The total yield during the year of fuel and timber for each coupe should be recorded in the Control Book after obtaining the information from the Range Officer.

285. *Control.*—Particulars connected with the working of the fuel coupes in each series shall be recorded for each year in a Control Book, which must be maintained in the District Forest Office. Particulars of subsidiary works done in the coupes of each series such as demarcation of coupes, etc., shall be entered for each year in the Record of Works. Specimen forms of Control Book and Record of Works will be found in Appendix IV.

286. *Control maps.*—In the detailed maps accompanying this working plan, the limits of coupes prescribed for working are marked only approximately. After the completion of fellings in each coupe, the area actually worked should be marked on the map in distinctive manner and the year of working noted in the middle. Where coupe arrears are worked subsequently (vide paragraph 275) the year of working should be noted in the arrear area. Where the coupe leased out differs in boundaries from that prescribed, the boundary as surveyed should be marked by dotted lines and the surveyed area also noted.

CHAPTER XIII.—WORKING PLAN FOR MANURE LEAF WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION OF THE WORKING CIRCLE AND CHARACTER OF VEGETATION.

287. *General.*—The manure leaf working circle comprises of the plains portion of the Athipakkam reserved forest in Tirukkoyilur Range.

The reserved forests which were formerly under panchayat management are in need of rest and rehabilitation ; but, consistent with the protection from indiscriminate fellings, there is need to regulate the removal of manure leaf by means of localised fellings, since the ryots have been accustomed to remove manure leaf from the reserved illicitly.

Hilly portions and areas included in the casuarina planting working circle and fuel working circle have been excluded from the manure leaf working circle.

288. *Character of the vegetation.*—The area allotted to this working circle is mostly open scrub. *Memecylon edule* occurs gregariously every where ; the other species met with include *Canthium didymum, Cassia auriculata, Dodonea viscosa, Cleistanthes collinus, Erythnoxylon monogynum, Gardenia gummifera, Gardenia latifolia, Grewia asiatica, Ixora parviflora, Pongamia glabra, Webera corymbosa, Wrightia tinctoria, Odina wodier* and *Azadirachta indica*, all of which are lopped for manure leaf. The soil is not particularly good. It varies from red loam to gravelly.

289. *Area.*—The area of the working circle is 1,070 acres and it forms one felling series of three coupes.

290. *Division of the working circle into felling series and coupes.*—The following statement shows particulars of the felling series and coupes :—

Name of felling series.	Coupe number.	Name of reserved forest.		Area of the reserved forest.	Area of the coupe.
(1)	(2)	(3)		(4)	(5)
				ACS.	ACS.
Athipakkam	I	Athipakkam (North) (part)	..	400	400
	II	Athipakkam (South) (part)	..	310	310
	III	Athipakkam (North) (part)	..	60	..
		Athipakkam (South) (part)	..	300	360
				Total ..	1,070

SECTION 2.—METHOD OF TREATMENT.

291. *System to be adopted.*—The trees and shrubs will be lopped. No branches thicker than a man's thumb shall be cut. The following trees shall not be lopped :—

Neem, Chloroxylon swietenia, Tamarind, Sapindus emarginatus, Buchanania latifolia, Cashewnut, Albizzia lebbek, and Albizzia amara.

292. *Felling cycle.*—The felling cycle will be three years. This will give a period of rest of two years for the shoots to grow up in the worked coupes and become ready for the next lopping.

293. *Regulation of felling.*—The working will be regulated by area in the year shown in the following statement :—

Coupe	I	1949–50	1952–53	1955–56	1958–59	1961–62
Do.	II	1950–51	1953–54	1956–57	1959–60	1962–63
Do.	III	1951–52	1954–55	1957–58	1960–61	1963–64

As far as possible, natural features have been adopted for the boundaries of felling series and coupes.

SECTION 3.—METHOD OF EXECUTING THE FELLINGS.

294. *Demarcation of annual coupes.*—One coupe will be worked annually. The coupe to be felled will be demarcated by cut lines 6 feet wide wherever necessary in the year previous to the year of felling.

295. *Agency of fellings.*—By order of Government, the seigniorage system for the removal of manure leaves will have to be continued. Permits will therefore be issued by foresters, for removal of manure leaves from the coupes of the year, at prescribed rates. The rates now in force are—

Re. 0–12–0 per cart-load permit.
Re. 0–0–6 per head-load permit.

296. *Felling rules.*—(i) The growing stock, excepting trees of *Neem, Chloroxylon swietenia, Tamarind, Sapindus emarginatus, Buchanania latifolia, Cashewnut, Albizzia lebbek and Albizzia amara* may be lopped subject to the condition that no branches thicker than a man's thumb are cut.

(ii) Shrubs which are less than 3 inches in girth at ground level, excepting the species referred to above, may be cut flush with the ground, a clean cut being made, without tearing the bark, by using a sharp instrument.

(iii) Removals shall take place only between sunrise and sunset.

SECTION 4.—SUBSIDIARY SILVILCULTURAL OPERATIONS.

297. In South Arcot district, the supply of manure leaves from the coupes proposed will be quite insufficient to meet the entire demand, on account of the poor quality of growth in the reserved forests. It is, therefore, considered necessary to artificially regenerate manure leaf species in selected areas. An experiment has been started during 1948–49 over 5 acres in Kattur reserved forest of Tiruporur Range for raising manure leaf plantation. This experiment will be continued during the next three years also at the rate of 5 acres each year. If the experiment proves successful, larger areas will be taken up for regeneration in future years.

298. *Agency of regeneration.*—Artificial regeneration with manure leaf species will be carried out departmentally over 5 acres in Kattur reserved forest during each of the years 1949–50, 1950–51 and 1951–52.

299. In the area taken up for regeneration, long strips 6 feet wide and 22 feet apart centre to centre will be laid out. The strips should run along contour lines so that the surface rain water will get absorbed in the strips under regeneration. In April-May, the strips will be clear-felled and the slash burnt. In June, the soil will be worked to a depth of 9 inches by means of a tractor plough, if one is available. In July seeds of *Cassia siamea, Cassia montona, Peltophorum ferrugineum* and *Pongamia glabra* will be sown in lines in the centre of cleared strips. Weeding and soil working will be done, as required, during the year. During next year, the plants will be thinned so as to have an admixture of all species. In the uncleared strips of 16 feet wide, seeds of *Cassia auriculata* and *Dodonea viscosa* will be sown broadcast, in July-October. No weeding or tending will be done in the uncleared area.

300. Cuttings of *Odina wodier, Thespesia populnea* and *Poinciana elata* to be obtained from Vriddhachalam, Cuddalore and Thirukkoyilur taluks, where they are grown in private gardens, may also be planted, 12 feet apart, on either side of the edge of the cleared strips. The cuttings should be 6 feet long and 12 inches in girth and should be planted, so that 3 feet is buried in the ground.

301. Regeneration may also be attempted through kumridars, if available. The site for regeneration may be located in any of the areas selected for artificial regeneration and the extent may be limited to a maximum of 10 acres at the discretion of the District Forest Officer. The kumridar will clear and uproot the existing growth before the end of May.

In June-July, seeds of *Cassia siamea* and *monta*, *Peltophorum ferrigineum*, *Pongamia glabra* will be sown in lines 30 feet apart. A margin of 1½ feet on either side of the sown lines will be maintained without any field crop and in the intervening strips, which will be 27 feet wide, the kumridars will be at liberty to sow field crops. The kumridar will continue to sow field crops for three years in all; during this period he should keep the plant rows well weeded and soil worked at all times. After the last harvest of the field crops, in the third year, when the kumridar is about to vacate the land, seeds of *Cassia auriculata* and *Dodonea viscosa* will be sown broadcast in the strips. Cutting of *Odina wodier*, *Thespesia populsea* and *Poinciana elata* will also be planted at intervals of 12 feet in the second year, if the lines are not fully stocked by the end of the first year. The instructions regarding the allocation of areas to kumridars and the issue of permit given in paragraph 156 will apply to this working circle also.

302. *Area for artificial regeneration.*—An area of 100 acres has been selected in the felling series for artificial regeneration with manure leaf species either departmentally or through kumridars. This area has been marked on the working circle map.

Section 5.—Other Regulations.

303. *Closure to grazing.*—The coupes under artificial regeneration will be closed to grazing for three years including the year of regeneration.

304. *Fire protection.*—No special methods of fire protection are necessary for this working circle.

305. *Control.*—The following control records will be maintained by the District Forest Officer. Sample forms of the Control Records are given in Appendix IV :—

(i) A Control Book.
(ii) A Manure Leaf Plantation Journal and Ledger.
(iii) A Record of Works.
(iv) A Control Journal.

CHAPTER XIV.—WORKING PLAN FOR MINOR FOREST PRODUCE WORKING CIRCLE.

Section 1.—General Constitution of the Working Circle.

306. The working circle comprises of all the reserved forests and unreserved lands under the control of the Forest Department.

307. *Area.*—The area of the working circle is 11,984 acres.

Section 2.—Method of Treatment.

308. *Kinds of produce available.*—The following kinds of minor forest produce occur in the reserved forests in such small quantities that there may be no commercial demand for them now. However, the right to collect them will be sold in auction taking each range as a unit :—

1 Tamarind fruits.
2 Mango fruits.
3 Woodapple.
4 Sarapappu fruits.
5 Nellikoi fruits.
6 Elandai fruits.
7 Nagai fruits.
8 Pungam seed.
9 Veppan seed.
10 Date fruits.
11 Palmyra fruits and leaves.
12 Broomstick grass.
13 Honey and wax.
14 Cashewnut (in Kurumbasum reserved forest).

309. *Agency of exploitation.*—The present system of exploitation of minor forest produce through contractors will continue.

310. Each range will form a lease unit for the minor forest produce. The lease for each such unit will be from the first of July to the thirtieth of June following, except in the case of cashewnut and sarapappu, for which the lease period will be from the first January to the thirtieth of June, and for which the lease will be sold in auction earlier than the other items of the minor forest produce.

Section 3.—Control.

311. A control book and record of works will be maintained by the District Forest Officer in the form given in Appendix IV.

CHAPTER XV.—WORKING PLAN FOR GRAZING WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION OF THE WORKING CIRCLE.

312. *Constitution.*—The Grazing Working Circle extends over all the reserved forests, and unreserves of the division with the exception of certain specified areas which are or may be closed to grazing in the interest of forest conservancy after the long period of maladministration while the areas were panchayat forests and for silvicultural or other reasons.

313. The following areas will be closed to grazing :—

(i) Areas under regeneration as prescribed under the concerned working circle in Chapters XI, XII and XIII.

(ii) Areas which the District Forest Officer may close for valid reasons—such as experimental plots, till the results of the experiment are finally recorded.

(iii) Areas temporarily closed by the District Forest Officer as per the rules on the subject as a punitive measure for unauthorized burning.

314. *Area.*—The area of the working circle is 11,879 acres.

SECTION 2.—METHOD OF TREATMENT.

315. *Regulation of grazing.*—Grazing will be regulated by licensing cattle to graze in the forests included in the plan, on payment of fees prescribed and subject to conditions now in force. The prevailing rates of grazing fees per cow unit are as follows :—

Name of range. (1)	Name of the reserves. (2)	Rate. (3)		
		RS.	A.	P.
Markanam	Agaram	0	8	0
	Markanam	0	8	0
	Kurumbaram—Cow	0	8	0
	Bull	0	10	0
	Kumalampattu	0	8	0
	Killai	0	10	0
	Picharavam	0	10	0
Tirukkoilur	Athipakkam	0	8	0

316. These rates will continue to be in force. It is desirable that the grazing rates for the entire division, is fixed uniformly at the rate of 0–12–0 per cow unit, for which action will be taken by the territorial Conservator in due course.

The grazing year will be from 1st July to 30th June following.

N.B.—Goats will not be permitted to grazing under any circumstances.

317. *Monsoon closure to grazing during July and August.*—While under panchayat management, the forests were closed to grazing during the months of July and August every year, in order to allow the grass to grow. This monsoon-closure will be continued and grazing permits will be valid for only ten months from 1st September to 30th June. The local people have been accustomed to this closure and they will not feel this as a hardship.

318. *Penning.*—No penning permits have been issued in the past ; the cattle from adjoining forests can reach the forests and return to the village in the evening. Hence, there is no demand for penning in any of the reserved forests.

SECTION 3.—IMPROVED METHODS OF GRAZING.

319. Under panchayat management, the villagers had been over grazing the area and even goats had been browsing illicitly. The conditions in this division are not, therefore, suitable at present for the introduction of rotational grazing, or other improved systems of grazing, such as the local block system or the special block system. Any attempt to introduce restrictions in grazing (except monsoon closure, to which they are accustomed), is likely to be resisted by the villagers. It is therefore desirable that we proceed cautiously and slowly in this matter with a view to educate the villagers on improved methods of grazing and thus get their willing co-operation. Hence, rotational grazing or other improved system of grazing will not be introduced during the first five years ; but later on, the District Forest Officer will, at his discretion and in consultation with the territorial Conservator introduce rotational grazing or other systems, wherever considered suitable.

SECTION 4.—CONTROL.

320. *Control.*—The following control records will be maintained by the District Forest Officer :—

(i) A Control Book.
(ii) A Record of Works.
(iii) A Control Journal.

The forms will be found in Appendix IV.

CHAPTER XVI.—WORKING PLAN FOR THE PROTECTION WORKING CIRCLE.

SECTION 1.—GENERAL CONSTITUTION OF THE WORKING CIRCLE.

321. This working circle comprises of all the reserved forests not included in any of the working circles, except the minor forest produce and the grazing working circles. Due to the poor growth and also due to the reserved forests being located in steep and eroded hill slopes, exploitation of any kind is not recommended. The catchment area of numerous small channels, which feed irrigation tanks dotted all over the district, is located in the forests of the protection working circle. It is hoped that strict protection during the next 15 years will improve the growth.

322. The working circle covers 4,085 acres as per the following details :—

Serial number and name of reserve.	Area in acres.	Casuarina Conversion Working Circle.	Fuel Working Circle.	Manure leaf Working Circle.		Total area.	Balance area for protection working circle.	Remarks.
				Regeneration.	Exploitation.			
	ACS.	ACS.	ACS.	ACS.	ACS.	ACS.	ACS.	
MARKANAM RANGE.								
1 Kurunbaram ..	603	..	..	..	..	..	603	
2 Kumalampattu ..	1,201	..	..	..	..	..	1,201	
3 Agaram	706	706	..	..	..	706	..	
4 Markanam ..	110	110	..	..	..	110	..	
5 Kille	638	159	50	..	..	209	429	
6 Pichavaram and Extension. (2489 plus 228).	2,717	35	1,100	..	..	1,135	1,582	
Total ..	5,975	1,010	1,150	..	..	2,160	3,815	
TIRUKKOYILUR RANGE.								
1 Athipakkam North and South.	4,500	..	3,060	100	1,070	4,230	270	
Total ..	4,500	..	3,060	100	1,070	4,230	270	
Grand Total ..	10,475	1,010	4,210	100	1,070	6,390	4,085	

323. *Character of the vegetation.*—The character of vegetation is described in Chapter II of Part I.

SECTION 2.—METHOD OF TREATMENT.

324. *General treatment.*—The reserved forests included in the whole working circle will be given complete rest from exploitation of any kind except grazing of cattle, collection of grass and minor forest produce.

CHAPTER XVII.—MISCELLANEOUS REGULATIONS.

SECTION 1.—FIRE PROTECTION.

325. So far as has been known, there have been only two fires, which occurred in 1947 over about half an acre of old casuarina plantations. The reserved forests are generally immune to fire owing to the thick growth of semi evergreen shrubs such as *Memecyclon edule*, *Cerissa spinarum*, *Webera corymbosa*, *Maba buxifolia* and the absence of grass during the hot weather. The existing casuarina plantations are not also liable to be damaged by fire. Hence, no fire protection operations of any kind are prescribed.

SECTION 2.—BUILDINGS.

326. There are no departmental buildings in the division, except the Range Office Building at Tirukoilur. The range offices are located in private rented buildings. As the work in the division is still of a tentative character, it is too early to decide on the location of the future range and section headquarters.

327. Residential quarters for the subordinate staff are essential. It is suggested that the question should be reviewed by the territorial Conservator in 1954–55 after the lapse of first five years, with reference to the conditions then existing. The construction of the following buildings from 1955–56 onwards may be considered by the District Forest Officer in due course during the currency of this working plan :—

		RS.
1958–59	.. Combined Range Office, and quarters at Markanam ..	10,000
1960–61	.. Ranger's quarters at Tirukkoilur	6,000

328. Foresters, forest guards and forest watchers are generally able to get suitable residential accommodation in villages adjoining the reserves. It is however desirable to provide them with departmentally constructed residential buildings for their accommodation so as to make them independant of obligations to village folk. It is suggested that this question should be reviewed by the territorial Conservator about 1961–62. By that time, the future lines of work in the division, would have become established.

SECTION 3.—ROADS.

329. There are no roads in this part of South Arcot district included in Chingleput Forest Division. After the centres of future planting of casuarina are established with reference to the works prescribed in this working plan, it is desirable to develop motorable earthern cart-tracks branching from the main roads and affording easy access to the planting centres. Such roads, which may be fair weather ones, can with advantage be developed along the reserve lines, wherever possible. It is suggested that the question be reviewed in 1954–55 by the territorial Conservator.

SECTION 4.—MALATTAR RIVER BED.

330. The introduction of casuarina in the waste lands of the Malattar River bed during the years of 1945–46 and 1946–47 proved a failure. Introduction of *Prosopis juliflora* by transplanting in pot plants, about 18 inches high, at an espacement of 12 feet by 12 feet, may produce successful results. One acre will be planted each year in each of the three series, Edayar, Gramam, and Iruvelpattu during the five years commencing from 1949–50 ; larger areas, up to 50 acres each year in each of the Edayar, Thiruvannainallur, Gramam, Iruvelpattu and Thiruthoraiyur series may be taken up for planting with *Prosopis juliflora*, if the territorial Conservator considers that the one-acre planting with pot plants during the previous five years has given successful results.

SECTION 5.—UNRESERVES OF KUNNIMEDU, SETTIKUPPAM, PUDUPET, PORTO NOVO AND ARIYAKOSHTI.

331. The introduction of casuarina in these unreserves during the years of 1945–46, 1946–47 and 1947–48 proved unsuccessful. Even the few plants, which existed in January 1948, began to show wholesale drying up in the summer of 1948. Obviously, this area is not suitable for growing casuarina. Cashewnuts dibbled in Settikuppam during 1947–48, dried after germination. Patches of cashewnut trees planted in patta lands adjoining the unreserve are stunted in growth. Hence, it is suggested that pot plants of *Prosopis juliflora*, *Pithecolobium dulce* and *Dalbergia multiflora* will be planted at an espacement of 12 feet by 12 feet in one acre in each of the Settikuppam and Porto Novo unreserves during the first five years from 1949–50. Larger areas, up to 50 acres, in each unreserve may be taken up from 1954–55 in all the five series, if the territorial Conservator considers that the regeneration operations of the first five years, have given successful results. Cuttings of *Ipomea* species, will be planted in order to fix the loose sand and enrich the soil by means of humus. The seeds of *Dalbergia multiflora* will be obtained from Tirunelveli division in consultation with the Provincial Silviculturist. The cuttings of *Ipomea* will be planted along with other species.

SECTION 6.—UNRESERVE OF KILIYANUR.

332. The area of this single block of unreserve is 500 acres. Casuarina was planted in 1946–47 in 50 acres. This has proved a failure, owing to the unsuitability of soil. The plantation will be abandoned. As the area contains stiff clayey soil, it is considered suitable for regeneration with *Acacia arabica*. It is therefore suggested that five acres will be sown with *Acacia arabica* every year during the three years from 1949–50 onwards and, if the experiment is successful, the area will be increased to 20 acres every year, with the approval of the territorial Conservator, in the following year.

333. Seeds of *Acacia arabica* which pass through goats, are said to possess increased capacity for germination. Also the soil must be ploughed in order to induce regeneration. Hence, an area of five acres will be taken up for 1949–50 onwards and the area will be ploughed in May-June after one shower of rain has fallen. The soil should be worked to

a depth of about 3 inches. In June-July, a herd of about 25 goats will be penned in the area and they will be liberally fed on thoroughly ripe babul pods already collected, so that the seeds pass through the goats. The seed having thus been navigated through the goats, should be distributed evenly over the whole area. Germination of seedlings will be noticed during the rains. In places devoid of seedlings, patches will be sown with a dozen seeds at an espacement of 12 feet by 12 feet during the north-east monsoon. No tending is necessary. But, strict protection from browsing by goats should be enforced.

SECTION 7.—OLD CASUARINA PLANTATIONS.

334. The following old casuarina plantations are not considered successful and so they have not been included in the Casuarina Conversion Working Circle. They will, however, be maintained until the maturity age of eight years when, whatever growth of casuarina exists, will be clear felled. These areas need not be replanted with casuarina.

Range.	Locality.	Year of plantation.	Area in acres.
Tirukkoyilur	Athipakkam Reserved Forest.	1946–47 plantation ..	100 acres in 2 bits.
Markanam	Kurumbaram Reserved Forest.	1945–46 plantation ..	19 acres.
	Komalampattu Reserved Forest.	1945–46 plantation ..	12 acres.
	Do.	1946–47 plantation ..	36 acres.

SECTION 8.—COCONUT TOPE IN KILLE RESERVED FOREST.

335. Between cairn Nos. 7 and 8 in Kille Reserved Forest, there exists two acres of coconut tope containing 182 trees, aged about five years, raised during the days of the Panchayat management. The trees are not yet bearing fruit. About half the number of the trees look stunted and show signs of retarded growth. It is suggested that the area be ploughed once in two years, to help the plants, until the trees begin to yield. The usufruct of the trees, will then be sold in auction annually, the lease period running from 1st July to 30th June.

SECTION 9.—BOUNDARIES OF RESERVES.

336. The boundaries of the Agaram, Markanam, Kumalampattu, Kurumbaram, Kille, Pichavaram and Athipakkam Reserved Forests, now under Departmental control, have been checked with reference to the section 16 notification and copies of the old Madras Survey Plans (scale 8 inches to 1 mile). The following defects in the boundaries came to the notice of the Working Plan Party during perumbulation and inspection of the reserved forests. These defects should be rectified—

(i) The boundary lines of all the Reserves require re-clearing.

(ii) Pillars have been planted near the survey stones. Survey stones are not traceable at most of the cairn pillars in Agaram Reserved Forest. Cairn pillars in some places have been found planted away from the survey stones. In some places, the cairn pillars are either absent or have fallen down. Some cairns contain double numbers and in Kurumbaram Reserved Forest almost all pillars are wrongly numbered. In all the reserved forests the cairns require renumbering according to map. Cairn numbers are written on the wrong side in pillars in a few cases.

(iii) In Pichavaram Reserved Forest and its extension, cairn numbers from 29 to 41, have been repeated, i.e., once in Pichavaram Reserved Forest and again in its extensions.

(iv) *Athipakkam Reserved Forest.*—At several points where the reserve bends, pillars are planted but not numbered in the field, as also in the map.

(v) Encroachments are noticed in the following reserves :—

Name of range.	Name of reserved forest.	Locality.
Markanam	Agaram	Between cairn Nos. 101 and 102 and 106 and 107.
	Kurumbaram ..	Encroachment has been noticed between cairn Nos. 13 and 16 in the eastern boundary of the reserved forest in Bit II. This could not be rectified for want of section 16 notification copy.
Tirukoilur	Athipakkam	Encroachment between cairn Nos. 87 and 89, 100 and 101, 111 and 114 and 126 and 127, have been noticed.

Section 10.—Reservation of Unreserves.

337. The following unreserved lands are included in the division. Attempt to raise casuarina plantations has not been successful. Every endeavour will be made to afforest them with fast growing species and, if successful, the question of their reservation should be taken up :—

	ACS.		ACS.
(i) Kunnimedu	276·00	(v) Malattar river bed ..	3,167·00
(ii) Pudupet	310·00	(vi) Ariyakoshti unreserve (excluding 15 survey numbers of 41·73 acres).	129·27
(iii) Settikuppam	126·00	(vii) Porto Novo (excluding 9 survey numbers of 10·1 acres).	121·09
(iv) Kiliyanur	561·00		

338. In the Ariyakoshti unreserve, there are 15 field survey numbers aggregating to 41·73 acres, which are now under the control of the Forest Department. Similarly, there are 9 survey fields with an aggregate area of 10·1 acres in Porto Novo unreserve. These survey fields lie scattered in small patches and are unsuitable for management by the Forest Department. It is, therefore, suggested that the following fields now under the control of the Forest Department be handed back to the Revenue department.

Ariyakoshti.

Survey numbers.	Extent in acres.	Survey numbers.	Extent in acres.
8/3, 7/2, 8/1	13·42	322/5	2·03
11/3	1·33	100/1	3·42
33/1	1·91	41/1	1·92
138/1	8·69	167/1	1·07
183/1	1·34	130/2, 194/2	2·97
156/4, 156/3	3·63		
		Total ..	41·73

Porto Novo.

Survey numbers.	Extent in acres.	Survey numbers.	Extent in acres.
83/1, 83/2, 83/6, 83/7	3·98	15 A/1 A	1·27
81/9, 81/12	1·35		
69/1, 72/4	3·56	Total ..	10·10

CHAPTER XVIII.—WORKING PLAN FOR PANCHAYAT FORESTS IN SOUTH ARCOT DISTRICT NOW UNDER MANAGEMENT OF PANCHAYAT WHEN THEY ARE RESUMED FOR MANAGEMENT BY THE FOREST DEPARTMENT.

339. In South Arcot Revenue district the following 36 reserved forests with an aggregate area of 95,808 acres are still under the management of the forest panchayats working under the control of the Revenue department :—

Taluk.	Serial number and name of reserved forest.	Area.	Remarks.
		ACS.	
Gingee	1 Siruvadi	3,561	
	2 Kuttakkadu	3,187	
	3 Padipallam	3,601	
	4 Pakkamalai	11,055	
	5 Gangavaram	6,627	
	6 Thandavasamudram	787	
	7 Karai	1,697	
	8 Turinjikadu	1,018	
	9 Adukkam	2,000	
	Total—9 reserved forests ..	33,533	
Villupuram	10 Odayanatham	1,603	
	11 Melkondai	480	
	Total—2 reserved forests ..	2,083	
Tindivanam	12 Kilsevoor	1,200	

Taluk.	Serial number and name of reserved forest.	Area. ACS.	Remarks.
Tirukoyilur	13 Nathamur, Bit I	4,500	
	14 Nathamur, Bit II	3,683	
	15 Thachampattu	980	
	16 Swamimalai	4,015	(Area as noted in the panchayat map).
	17 Seedevi	2,772	
	18 Kallamedu	1,030	
	19 Kunjaram	1,200	
	20 Edakkal	3,390	
	21 Pandur	955	
	22 Kuttadi	1,700	
	23 Sirupakkam	1,080	
	24 Nayanoor	1,639	
	Total—12 reserved forests	26,944	
Vriddhachalam	25 Nangur	1,694	
	26 Semakottai	6,075	
	Semakottai Extension	182	
	27 Ameri	862	
	28 Parur	2,737	
	Parur Extension	327	
	29 Karamangudi	1,100	
	30 Kuppanatham	777	
	31 Narimanam	928	
	32 Kattumailur	1,290	
	Kattumailur Extension	485	
	33 Velangulam	1,261	
	Total—12 reserved forests	17,718	
Kallakurichi	34 Alwarmalai	8,795	
Cuddalore	35 Kangiruppu, Bit I	2,956	
	36 Kangiruppu, Bit II	2,579	
	Total—2 reserved forests	5,535	
	Total—36 reserved forests	95,808	

Note.—	
(i) Total reserves in South Arcot district as per list	60
(ii) Reserved forests already under Departmental control (Markanam range 7) (Tirukkoyilur range 1).	8
(iii) Reserves under the management of panchayat for which Working Plan has been written now.	36
(iv) Remaining reserves under the control of the panchayats which do not come under the South Arcot District Working Plan.	16 (Kallakurichi taluk 15, Vriddhachalam 1).

340. *Soil types.*—The types of soil in the Reserve in South Arcot district can be broadly classified as follows :—

(i) *Shallow sandy loam, lying over a hard rocky pan, watertable varying from 20 to 30 feet and the whole area containing rocky outcrops.*—(*a*) Swamimalai, Nathamur I and Nathamur II bits, Seedevi, Part of Kallamedu Kunjaram, Edakkal, Pandur, Sirupakkam and Nayanoor in Tirukoilur taluk.

(*b*) Karai, Turinjikkadu, Adukkam, Thandavasamudram in Gingee taluk.

(*c*) Odayanatham Reserved Forest in Villupuram taluk.

(*d*) Alwarmalai reserved forest in Kallakurichi and Tirukoyilur taluks.

(ii) *Red sandy soil, hard and compact, with very poor absorbing capacity for water, extending to a depth of 15 feet to 35 feet with a watertable below 35 feet.*—(*a*) Semakottai, Ameri, Parur, Kuppanatham, Nairmanam, Velangulam in Vriddachalam taluk.

(*b*) Kangiruppu Bit I and Bit II in Cuddalore taluk.

(*c*) Eastern half of Kallamedu and a major portion in patches in Kuttadai Reserved Forest in Tirukoyilur taluk.

(iii) *Black cotton soil.*—(*a*) Nangur, Karamangudi, Kattumailur reserved forests in Vriddachalam taluk.

(*b*) Melkondai Reserved Forest in Villupuram taluk.

(iv) *Rocky hills varying from 200 feet to 1,200 feet in height with pockets of washed off soil, deep and fertile, carrying rich growth of fuel species.*—(*a*) Siruvadi, Muttukkadu, Padipallam, Gangavaram Reserved Forests in Gingee taluk.

341. *General description of grazing blocks.*—The reserves have been highly degraded by the past system of management by the panchayats. The main causes for the degradation are (*a*) excessive grazing by cattle and browsing by goats, (*b*) uncontrolled and illicit cutting and removal of trees for fuel and (*c*) indiscriminate and irregular collection of manure leaves, thorns and faggot woods on permits. The exhibition of a poor type of growth, mainly scrub jungle composed of chiefly thorny species in all the reserves, is not due to the incapacity of the soil to carry a better growth, but due to the repeated and continuous occurrence of the above biotic factors. The soil conditions have been considerably changed and only hardy and thorny species like *Acacia leucophloea*, *Dichrostachys cinerea*, *Rhandia dumometorum*, *Flacourtia ramontchei*, *Euphorbia*, etc., are found coming up in the soil. If the cause of this retrogression is removed, the soil conditions may improve resulting in an improved growth of fuel species. In Gingee taluk, all the reserves are hilly and rocky and the fringes of hills and pockets of washed off soil carry a rich and well-stocked growth of fuel species, chiefly *Albizzia amara*, *Neem*, *Tamarind*, *Acacia leucopholea*, *Sapindus emarginatus*, *Anogeissus latifolia*, etc. A gregarious patch of *Hardwickia binata* is found in Muttukkadu reserved forest.

342. *Basis of proposals for future management.*—When these panchayat forests are retransferred to the Forest department for management, they may be worked on the following lines :—

Serial number and name of Working Circle.	*Area in acres.*	*Number of felling series.*	*Remarks.*
1 Fuel Working Circle	28,141	17	Located in 17 reserved forests.
2 Manure Leaf Working Circle	9,625	14	Located in 13 reserved forests.
3 Grazing Working Circle	95,808	..	Covers all the panchayats[reserved forests.
4 Minor Forest Produce Working Circle	61,704	22	Lease units. Each reserved forests, single lease unit.
5 Areas covered by cashew tope, teak plantation, sandalwood plantation, *Bassia latifolia* plantation, Nange tope.	110	..	
6 Protection Working Circle	51,102	23	Reserved forests. The Working Circle has been formed comprising the rest of the forests not covered by other working circles except minor forest produce and working circles.
7 Areas selected for fuel plantation	5,485	15	Reserved forests.
8 Areas selected for artificial regeneration of manure leaf species.	1,175	10	Do.
9 (*a*) Area occupied by Kasturibai Memorial Leprosy Sanatorium Buildings.	27	..	In Turinjikadu reserved forest.
(*b*) Further area proposed for extension of buildings by the Committee.	120	..	Do.
10 Area clear-felled and under cultivation by ryots under Grow More Food Scheme.	23	..	In Pakkamalai reserved forest.

343. *Fuel Working Circle.*—There is great demand for fuel in the villages adjoining the reserves and it is desirable to open fuel coupes as follows on 40 years' rotation. The areas proposed for opening up such fuel coupes are either in parts of reserved forests or in whole reserved forests according to the availability of firewood in such areas. Hill slopes and hill forests that form the watersheds of innumerable tanks and streams like Pakkamalai Reserved Forest are excluded from working for fuel coupes. When these forests come under departmental management, the opening up of 17 fuel series in 17 reserves extending over 28,141 acres is suggested :—

Serial number and taluk.	*Name of series.*	*Name of reserved forest.*	*Area allotted.*	*Approximate yield per acre.*	*Markets for produce.*
				TONS.	
1 Tirukoyilur	Swamimalai	Swamimalai (part)	2,510	1½—2	Tirukoyilur.
2 Do.	Nathamur Bit I.	Nathamur Bit I (part).	2,650	2—3	Do.
3 Do.	Kunjaram	Kunjaram	1,200	1½—2	Ulundurpet.
4 Do.	Kuttadi	Kuttadi (part)	1,055	3—4	Do.
5 Do.	Edakkal	Edakkal (part)	2,325	3—4	Do.
6 Vriddachalam	Manakollai	Semakottai (part)	2,277	1½—2	Vriddachalam.
7 Do.	Kotteri	Do.	2,300	1½—2	Do.
8 Do.	Karamangudi	Karmangudi	1,100	2—3	Do.
9 Do.	Kattumallur	Kattumailur (part)	1,300	2—3	Do.
10 Do.	Velangulam	Velangulam (part)	1,186	5—8	Do.
11 Kallakurchi	Alwarmalai	Alwarmalai (part)	2,000	1½—2	Ulundurpet.
12 Gingee	Siruvadi	Siruvadi (part)	1,470	3—6	Gingee.
13 Do.	Kuttukadu	Kuttukadu (part)	1,300	3—6	Do.
14 Do.	Gangavaram	Gangavaram (part)	1,800	3—4	Ananthapuram.
15 Do.	Adukkam	Adukkam (part)	1,175	3—6	Kancheepuram and Tirukoyilur.
16 Do.	Karai	Karai (part)	1,357	2—3	Gingee.
17 Gingee and Villupuram.	Turinjikadu	Turinjikadu (part) 656 Odayanatham (part) 480	1,136	3—5	Ananthapuram.
			28,141		

344. The provisions of Chapter XII, Working Plan for the Fuel Working Circle will be made applicable wherever possible to the working of these fuel series. Detailed plans on a scale of 4 inches to 1 mile have been prepared showing the location of the fuel coupes for working for the first 15 years. The fuel coupes will be offered in auction and will be treated as unsaleable by the District Forest Officer if fair prices are not realized. Coupes treated as unsaleable in one year will be offered for sale in subsequent years. The following statement shows the sequence and areas of the coupes for working :—

Statement showing the division of Fuel Felling Series into coupes and their area.

Serial number and name of taluk.	*Name of Felling series.*	*Reserves comprised.*	*Area of series.*	*Area of coupes.*														
			ACS.	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*	*X*	*XI*	*XII*	*XIII*	*XIV*	*XV*
1 Tirukoyilur	Swamimalai	Swamimalai (part)	2,510	62	62	62	62	62	62	62	62	62	62	62	62	62	62	76
2 Do.	Nathamur Bit I	Nathamur Bit I (part)	2,650	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66
3 Do.	Kunjaram	Kunjaram Reserved Forest	1,200	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
4 Do.	Edakkal	Edakkal Reserved Forest (part).	2,325	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
5 Do.	Kuttadi	Kuttadi Reserve Forest (part).	1,055	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
6 Vriddachalam	Memakollai	Semakottai (part)	2,227	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
7 Do.	Kotteri	Do.	2,300	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
8 Do.	Karmangudi	Karmangudi (part)	1,100	40	24	24	25	25	26	25	27	27	25	27	27	25	25	25
9 Do.	Kattumailur	Kattumailur (part)	1,300	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
10 Do.	Velangulam	Velangulam (part)	1,186	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
11 Kallakurichi	Alwarmalai	Alwarmalai (part)	2,000	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
12 Gingee	Muttukkadu	Muttukadu (part)	1,300	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
13 Do.	Siruvadi	Siruvadi (part)	1,470	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
14 Do.	Karai	Karai Reserved Forest	1,357	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
15 Do.	Gangavaram	Gangavaram (part)	1,800	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
16 Do.	Adukkam	Adukkam (part)	1,175	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
17 Villupuram	Turinjikadu	(1) Turinjikadu (part) 656 (2) Odayanatham (part) 480	1,150	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28

345. *Artificial regeneration of felled coupes.*—The regeneration of the felled coupes will be mainly by coppice regrowth. But, with a view to improve the composition of the canopy by the introduction of more valuable fast-growing species, it is prescribed that artificial regeneration should be attempted in the year following the clear felling, in about 10 per cent of the area of the coupe, subject to a maximum of five acres. In the first five years, this artificial regeneration will be confined to the following three series :—

(i) Swamimalai Series.
(ii) Nathumur Bit I Series.
(iii) Muttukadu Series.

346. If the results of artificial regeneration are declared to be successful by the territorial Conservator at the end of five years, it will be extended to all the series, wherein fuel coupes are worked and also the area treated in each coupe will be increased to whatever extent possible at the discretion of the Conservator.

347. *Regeneration notes.*—The following notes are intended for the guidance of the District Forest Officer, who will modify them if necessary, in consultation with the territorial Conservator :—

(i) *Layout of the regeneration plots.*—In each coupe, about 10 per cent of the area subject to a maximum of five acres will be taken up in strips of two chains wide running along the length of the coupe, in plain ground and along the contour in sloping ground. The strips will be located in those parts of the coupe, containing the deepest soil and considered suitable for artificial regeneration. If more than one strip is taken in the same coupe, the strips should be spaced at least 5 chains apart, so that the subsequent natural regeneration by seed will benefit as large an area as possible.

(ii) *Burning.*—Any slash left by the contractor may be piled and well compressed in the strips and burnt in April-May, after the contractor vacates the coupe on 31st March. The burning should be done in the evening against the wind, after taking the precaution to see that the fire does not escape.

(iii) *Preparation of the area.*—Immediately after the burn, the strips will be ploughed with a country plough after a good rain has fallen. The espacement for planting will be 12 feet by 12 feet. The planting places will be marked by means of a mammutty. One foot cube pits will be dug. As the strips are two chains wide, there will be 11 rows of plants in each strip running longitudinally along the length of the strip.

(iv) *Choice of species and planting practice.*—It is considered that transplanting pot plants of *Prosopis juliflora*, *Pithecolobium dulce* and *Albizzia lebbek* at planting spaces will give the best results. The pot plants will be raised by sowing seeds in the nursery in bottomless and pots (5 inches high, 4 inches diameter at top and 3 inches diameter at bottom) in May-June and watering as required. When the seedlings are about 18 inches high, the plants will be removed with the pots, with not less than 9 inches of shoot system and not less than 9 inches of the root system and transplanted at planting spaces in the regeneration area in September-October, on rainy days. The pots will be cracked at the time of planting and the cracked portions will be removed after about two months when the plants are established and have thrown out new flush of leaves.

The 11 rows in each strip will be planted as below :—

Rows 1 to 4, 6, 8, 10—*Prosopis juliflora*.
Rows 2, 7, 11—*Pithecolobium dulce*.
Row 9.—*Albizzia lebbek*.

(v) *Cultural operations.*—A soil working will be done in December-January with the purpose of conserving soil moisture.

(vi) *Second year treatment.*—No tending will ordinarily be necessary during the second year. But weeding and soil working will be done at the discretion of the District Forest Officer.

(vii) *Thinning.*—No thinnings are considered necessary. However, the District Forest Officer will examine the crop every year after the 5th year and do whatever thinnings he considers necessary.

(viii) *Artificial regeneration by kumri.*—The following areas are selected for artificial regeneration by the Kumri Method as explained in paragraph 3 of Part II of the Working plan. If kumridars become available, about 25 acres may be taken up annually in each reserve and regenerated :

Serial number and taluk.	*Name of reserved forest.*	*Area.* ACRES.	*Remarks.*
1 Tirukkoyilur	Swamimalai	250	
2 Do.	Nathanur, Bit I	325	In two bits (215 plus 110).
3 Do.	Do. Bit II	515	In two bits (415 plus 100).
4 Do.	Seedevi	100	
5 Do.	Kallamedu	200	
6 Do.	Edakkal	200	
7 Do.	Kuttadi	245	
8 Do.	Sirupakkam	150	
9 Do.	Pandur	200	
10 Vriddhachalam	Nangur	300	
11 Do.	Semakottai (North)	400	
12 Do.	Do. (South)	400	
13 Kallakurichi	Alwarmalai	300	
14 Cuddalore	Kangiruppu I	600	
15 Do.	Kangiruppu II	1,300	
		5,485	

348. *Manure Leaf Working Circle.*—There is a great demand for manure leaf by ryots for wet cultivation all round the reserves. It is proposed to open 14 manure leaf series in 13 reserves extending over 9,157 acres. In Gingee taluk, though there is great demand for green leaf manure, no areas have been proposed as there are no suitable areas available and the reserves are all hilly. Removal of manure leaf, will however be permitted from the coupes under felling in the fuel series :—

Serial number and taluk.	*Name of series.*	*Reserves.*	*Area of series.* ACS.	*Areas of blocks.* *I* ACS.	 *II* ACS.	 *III* ACS.
1 Tirukkoyilur	Nathamur, Bit I	Nathamur, Bit I (part).	1,400	455	485	460
2 Do.	Swamimalai	Swamimalai (part)	1,155	375	350	430
3 Do.	Villivalam	Nathamur, Bit II (part).	860	260	200	400
4 Do.	Seedevi	Seedevi (part)	800	320	240	240
5 Do.	Edakkal	Edakkal (part)	740	230	250	260
6 Do.	Kuttadi	Kuttadi (part)	300	100	100	100
7 Do.	Sirupakkam	Sirupakkam (part)	300	100	100	100
8 Do.	Nayanoor	Nayanoor (part)	500	180	160	160
9 Vriddachalam	Semakottai (South)	Semakottai (part)	730	240	270	220
10 Do.	Kattumailur	Kattumailur (part)	400	135	130	135
11 Kallakurichi	Alwarmalai (North)	Alwarmalai North (part).	750	260	210	280
12 Do.	Do. (South)	Alwarmalai South (part).	850	270	295	285
13 Cuddalore	Kangiruppu, Bit I	Kangiruppu, Bit I (part).	500	150	200	150
14 Gingee	Karai	Karai (part)	340	110	130	100
Total	14 series.	13 reserved forests.	9,625			

349. When these panchayat forests are transferred to the Forest Department for management, the provision of Chapter XIII, working plan for manure leaf working circle will be made applicable, as far as possible. Permits for removal of manure leaf on seigniorage will be issued through foresters from the coupes allotted for the year.

350. The following areas are considered suitable for artificial regeneration with manure leaf species :—

Serial number and taluk.	*Name of reserved forest.*	*Area.* ACS.	*Remarks.*
1 Tirukkoyilur	Swamimalai	100	
2 Do.	Nathamur, Bit I	125	
3 Do.	Do. Bit II	100	
4 Do.	Seedevi	100	
5 Do.	Edakkal	125	
6 Do.	Kuttadi	100	
7 Vriddhachalam	Semakottai (South)	150	
8 Do.	Kattumailur	75	(In two bits, each being 100 acres).
9 Kallakurichi	Alwarmalai	200	
10 Cuddalore	Kangiruppu, Bit I	100	
	Total	1,175	

351. *Minor Forest Produce Working Circle.*—The reserves included in this working circle and the chief items of minor forest produce collected in each reserve are as follows :—

Serial number and name of reserved forest.	*Area.*	*Items of minor forest produce.*	*Revenue realised by panchayat.*			*Remarks.*
	ACS.			RS.	A.	
		Tirukkoyilur taluk.				
1 Edakkal	3,390	Tamarind, granite, faggot wood, leaf manure, thorns and cassia bark.	1944–45	113	7	
			1945–46	71	13	
			1946–47	115	14	
			1947–48	..		Information not available.
2 Kuttadi	1,700	Tamarind	1944 to 1948.	..		
		Vriddhachalam taluk.				
3 Nangur	1,694	Tamarind, leaf manure, faggot wood, thorns and cyeas.	1944–45	25	0	Tamarind only.
			1945–46	64	15	All items.
			1946–47	88	0	Do.
			1947–48	72	0	Do.
4 Semakottai	6,257	Cashewnut, tamarind and cassia auriculata bark.	1944–45	285	0	Cashewnut only.
			..	12	0	Avaram bark.
			1945–46	251	0	Cashewnut only.
			1946–47	261	0	Do.
5 Ameri	862	Cashewnut	1944–45	62	0	
				3	0	Avaram bark.
			1945–46	10	0	Cashewnut only.
			1946–48	..		
6 Parur	3,064	Tamarind, soapnut and cassia auriculata bark.	1944–45	11	0	Tamarind only.
			1945–46	11	0	Soapnut only.
			1946–47	16	0	Avaram bark.
				4	8	Tamarind.
			1947–48	16	0	Avaram bark.
				5	0	Soapnut.
7 Karmangudi	1,100	Tamarind and woodapple.	1944–45	132	2	Included leaf manure, thorn faggot wood, tamarind and woodapple.
			1945–46	15	11	
			1946–47	28	8	
			1947–48	5	0	Woodapple only.
8 Narimanam	928	Cashewnut	1943–44	286	0	Chief collection is from Narimanam. Reserved forest (items 8 and 9 combined).
9 Kuppanatham	777	Do.	1944–45	..		
			1945–46	185	0	
			1946–47	408	0	
			1947–48	..		
10 Velangulam	1,261	Do.	1944–45	120	0	About 200 trees.
			1945–47	..		
			1947–48	35	0	
		Cuddalore taluk.				
11 Kangiruppu, Bit I ..	2,956	Cashewnut	1944–45	..		
			1945–46	198	0	About 200 trees.
			1946–47	100	0	Do.
			1947–48	65	0	Do.
12 Kangiruppu, Bit II ..	2,579	Do.	1944–45	..		
			1945–46	164	0	
			1946–47	123	0	
			1947–48	121	0	
		Gingee taluk.				
13 Muttukadu	3,187	Tamarind, soapnut and woodapple.	1944–45	46	0	(All items combined).
			1945–46	66	0	
			1946–47	83	0	
			1947–48	75	0	
14 Siruvadi	3,561	Do.	1944–45	431	0	Do.
			1945–46	238	0	
			1946–47	264	0	
			1947–48	650	0	
15 Padipallam	3,601	Do.	1944–48	..		Not available.
16 Pakkamalai	11,055	Do.	1944–45	2,665	0	All items combined from 3 panchayats out of 4 for this reserved forest.
			1945–46	941	0	
			1946–47	910	0	
			1947–48	2,247	0	
17 Gangavaram	6,627	Do.	1944–45	228	0	
			1945–46	901	0	
			1946–47	261	0	
			1947–48	986	0	
18 Karai	1,697	Tamarind	1944–45	8	0	
			1944–48	..		
19 Thandavasamudram ..	787	Tamarind and soapnut ..	1944–45	13	0	
			1945–46	19	7	
			1946–47	7	0	Tamarind only.
			1947–48	10	0	Do.
20 Turinjukadu	1,018	Do.	Not available.			
21 Adukkam	2,000	Do.				
22 Odayanatham	1,603	Do.				
Total area ..	61,704					

352. *Protection Working Circle* (*Area* 51,102 *acres*).—A protection working circle has been formed comprising of the rest of the reserves not covered by other working circles except the minor forest produce and the grazing working circles. The provisions of Chapter VII of the working plan will be made applicable here.

Serial number and taluk.		Name of reserved forest.	Area in acres.	Remarks.
1	Tirukkoyilur	Nathamur, Bit I	2,208	
2	Do.	Thatchampattu	980	
3	Do.	Seedevi	1,770	
4	Do.	Kallamedu	830	
5	Do.	Pandur	755	
6	Do.	Sirupakkam	630	
7	Do.	Nayanoor	1,139	
8	Vriddhachalam	Nangur	1,390	
9	Do.	Ameri	862	
10	Do.	Parur	3,064	
11	Do.	Kuppanatham	777	
12	Do.	Narimanam	928	
13	Kallakurichi	Alwarmalai	4,695	
14	Cuddalore	Kangiruppu, Bit I	1,754	
15	Do.	Do. Bit II	1,261	
16	Tindivanam	Kilsevur	1,200	
17	Gingee	Siruvadi	2,091	
18	Do.	Muttukadu	1,887	
19	Do.	Padipallam	3,601	
20	Do.	Pakkamalai	11,030	
21	Do.	Gangavaram	4,820	
22	Do.	Thandavasamudram	787	
23	Do.	Turinjikadu	215	
24	Do.	Adukkam	825	
25	Villupuram	Odayanatham	1,123	
26	Do.	Melkondai	480	
		Total	51,102	

Miscellaneous.

353. I. *Mango and tamarind tope in Seedevi B. Bit reserved forest in Tirukkoyilur taluk* (*Area about* 2 *acres*).—The tope has been raised by the Panchayat and is situated in Seedevi 'B' Bit on southern corner of the western boundary of the reserve.

The tope is about 2 acres in extent and contains about 50 mango trees of 5 year old and 20 tamarind trees. The mango trees bear-fruits though the lease amount is very negligible. In 1946–47, the usufruct has been sold for about Rs. 6. The tope may be maintained as it is.

No special protection is required as the trees are beyond the reach of being damaged by animals. The tope may be leased annually, subject to the condition that the lessee should plough the whole area once every year before the flowering season.

354. II. *Teak plantation in Gangavaram Reserved Forest in Gingee taluk.*—The teak plantations are in 3 bits of about 7 acres in extent, each bit being about 2 to $2\frac{1}{2}$ acres in extent. The plantations have been raised by the Forest department in the year 1924 (information gathered from the president and villagers) and they are maintained by the panchayat. The plantations were raised by dibbling seeds in pits at an espacement of 6 feet by 6 feet. There are about 500 teak trees of 12 inches to 30 inches in girth and average 30 feet in height on the average in the whole area. The area appears to have been carrying an adequate stock of teak trees about 3 to 4 years back. No thinning has been done in the plantations but the decrease in stocking is due to the drying up of trees from May to June every year due to drought and also due to small scale of smuggling as evidenced from the dead and felled stumps existing in the area. Drying up of trees was noticed during July 1948 due to unusually severe drought of 1947.

The plantation has been raised in Gangavaram Panchayat in Gangavaram Reserved Forest in patches of washed off soil. The elevation is about 1,000 feet and the soil is a well drained soil. Natural regeneration of the species is absent.

The plantations may be maintained as they are and a light thinning may be carried out in conjested areas to afford more light and growing space to the dominant trees. The thinned poles may be auctioned as they will fetch good price.

355. III. *Bassia Latifolia plantation.*—This is situated in Nangur Reserve in Vriddhachalam taluk. The plantation has been raised by the panchayat in about 2 acres. The plants are of about two years old and the area contains about 100 plants of 3 to 4 feet height. The plantation has been raised from seedlings obtained from natural regeneration under mother trees and planted in pits. The espacement is not uniform. The seedlings are watered during non-rainy days, usually from March to June. The plants are found drying due to drought.

The plantation may be maintained.

356. IV.. *Bamboo plantation.*—This plantation has been raised by the panchayat in the year 1945 in about 2 acres in Nangur Reserve in Vriddhachalam taluk. Rhizomes of *Bambusa arundanacia* collected from Kallakurichi Hills have been planted in the area in pits at an espacement of about 10 feet by 10 feet. The seedlings are watered during hot weather and there are about 50 clumps each clump containing 5 to 6 culms of 10 to 15 feet in height. The plantation may be maintained.

357. V. *Cashew tope I.*—The tope has been raised by the panchayat in the Velangulam Reserved Forest in Vriddhachalam taluk in about 75 acres. There about 200 fruit-yielding trees. The area is not uniformly socked but contains only scattered growth. A major portion of the revenue realised from the reserve is by the sale of cashewnuts in this area. The plantation may be maintained.

358. *Cashew tope II.*—In Kangiruppu Bit I, Cuddalore taluk, an area of about 2 acres contain cashewnut plantation raised by the panchayat. The area contains about 100 fruit yielding trees. The plantation had been raised under Kumri System, the Kumridar being permitted to be in possession of the area for his food crop cultivation for five years and to raise cashew plantation by the end of third year along with his food crop cultivation. The plantation may be maintained as it is.

359. The cashewnut plantation in Kangiruppu Bit II in Cuddalore taluk has also been raised by the panchayat in about 18 acres under Kumri system explained under the preceding paragraph. There are about 450 fruit-yielding trees. A major portion of the revenue realised by the sale of cashewnuts in the reserve is obtained from this plantation.

The plantation may be maintained as it is.

360. VI. *Kasturibai Gandhi National Memorial Trust Buildings.*—The old forest rest house site in Turinjikadu Reserve is now occupied by Kasturibai Gandhi National Memorial Trust Buildings for Leprosy Relief for Women and Children. About 20 acres has been leased out by the panchayat to the Committee for the construction of buildings and another 6-2/3 acres for widening the road leading from the site to Tiruvannamalai-Villupuram Road. It is understood from the Committee that another 20 acres for extending the existing buildings and another 100 acres for the construction of a Leprosy Sanatorium for Men will be required by them and that they already referred this matter to the Government. These 147 acres have been reserved in these proposals for the use of the Committee.

361. VII. *Cultivation by ryots under the Grow More Food Scheme.*—An area of about 23 acres in Pakkamalai Reserve in three bits, has been allowed to be clear-felled by ryots for cultivation under the Grow More Food Scheme by the Revenue Department. Further information regarding the conditions under which the ryots were permitted to clear-fell and cultivate the area are not available. These areas may be resumed to Government at the earliest time possible and opportunity offered to the ryots for Kumri cultivation in the reserves according to the proposals contained in this Chapter.

FOR CHINGLEPUT AND SOUTH ARCOT DISTRICTS

CHAPTER XIX—ESTABLISHMENT AND LABOUR.

SECTION 1.—ESTABLISHMENT.

362. The statement of establishment furnished in paragraph 43 under Chapter IV of Part I, shows the staff of the division as it stood on 1st April 1947.

In G.O. No. 884, Development, dated 24th February 1948, 24 panchayat forests in Chingleput district were transferred to departmental management. These reserved forests were formed into two additional beats in Sriperumbudur Range and six additional beats in Chingleput Range.

363. The exact position regarding sanctioned strength of establishment in the division for 1948–49 is as below :—

I. Establishment sanctioned in G.O. Ms. No. 575, Development, dated 6th February 1948—

Ministerial Establishment—

2 Upper Division Clerks, 1 Head Clerk and 1 Accountant.
9 Lower Division Clerks, 4 for District Forest Office and 5 for Range Offices.
1 Typist.
1 Draftsman.
9 Peons (4 for District Forest Office and 5 for Range Offices).

Executive and Protective Staff—

5 Rangers.
23 Foresters.
66 Forest guards.

II. Sanctioned in Chief Conservator's No. 1003/46-B-2, dated 16th April 1948—

25 Forest watchers.

III. Establishment sanctioned in G.O. No. 884, Development, dated 24th February 1948—

3 Foresters.
20 Forest guards.
16 Forest watchers.

364. Thus, for the year 1948–49, the total executive and protective establishment sanctioned for the division is as follows :—

5 Rangers.
26 Foresters.
86 Forest guards.
41 Forest watchers.

365. But, owing to the very distributed nature of the present forests and unreserves under departmental management the above staff cannot be employed as intensively and to the maximum advantage as desirable. By taking over the ramaining 25 panchayat forests in Chingleput and 51 panchayat forests in South Arcot district a more ration distribution of the staff could be effected. When this is done, it would be necessary to increase the number of watchers to 86 on the analogy that each beat will require at least one guard and one watcher.

SECTION 2.—LABOUR.

366. The labour may be considered as being adequate in all the ranges for carrying out the prescriptions of the working plan.

FOR CHINGLEPUT AND SOUTH ARCOT DIVISIONS.

CHAPTER XX.—FINANCIAL FORECAST.

SECTION 1.—REVENUE AND EXPENDITURE.

367. During 1947–48, the division worked at a deficit of Rs. 2,04,407 as shown below :—

	RS.
Expenditure on works	1,16,195
Expenditure on establishments	1,04,855
Total, expenditure ..	2,21,050
Less Revenue ..	16,643
Net deficit ..	2,04,407

368. The following statements show the anticipated revenue and expenditure of the division for the working plan period of 15 years from 1949–50 to 1963–64. For new works like plantations proposed in the working plan, the revenue and expenditure items have been estimated. As regards, the miscellaneous items of revenue and expenditure on establishment, the figures for the financial year 1947–48 have been taken as the basis for the calculations for future years.

The estimates indicate an average annual deficit of Rs. 56,100.

369. This division will continue to work at a deficit until the casuarina, fuel and manure leaf plantations raised during the period of this plan came for felling during the next period of the plan and even then, this division can never yield profit as the reserve are scattered in small bits all over the two districts of Chingleput and South Arcot and the cost of establishment is comparatively high, compared to their productive capacity. It has to be mentioned, however, that the cost of establishment may be capable of reduction in view of the fact that Provincial service officers may hold charge of the division instead of Imperial Forest Service Officers.

Taking a long range view, the division, in spite of its working at a loss, has to be maintained on account of the indirect benefits obtained through preservation of forests which contain catchment areas, and consequent prevention of soil erosion and silting up of the tanks in the interest of the agriculturists. The deficits will have been more than compensated in the long run by these eventual benefits.

CHINGLEPUT DISTRICT.

I. CASUARINA CONVERSION WORKING CIRCLE.

Revenue.	RS.	*Expenditure.*	RS.
(1) To sale of 2,781 acres of casuarina plantations at Rs. 300 per acre.	8,34,300	(1) By cost of planting 4,206 acres with casuarina at Rs. 150 per acre.	6,30,900
(2) To sale produce obtained from prunings after paying cost of pruning at Rs. 3 per acre in 2,781 acres, Rs. 8,343 or	8,300	(2) By cost of nursery seedlings for 4,206 acres at Re. 1 per acre.	4,200
		(3) By demarcation of plantation stones at Rs. 40 per annum for 15 years.	600
Total ..	8,42,600	Total ..	6,35,700

II. FUEL PLANTATION WORKING CIRCLE.

Revenue.	RS.	*Expenditure.*	RS.
		(1) By cost of planting of 2,595 acres with fuel, species, Rs. 40 per acre.	1,03,800
		(2) By demarcation of plantations with stones at Rs. 40 per annum for 15 years.	600
Total ..	..	Total ..	1,04,400

III. MANURE LEAF WORKING CIRCLE.

Revenue.	RS.	*Expenditure.*	RS.
To sale of permits for manure leaves from eight annual coupes of about 3,500 acres per annum at Re. 0-6-0 per acre.	19,700	(1) By cost of demarcating eight annual coupes at Rs. 10 per coupe for 15 years.	1,200
		(2) By artificial regeneration of 1,033 acres with manure leaf species in 15 years at Rs. 72 per acre.	79,500
Total ..	19,700	Total ..	80,700

IV. GRAZING WORKING CIRCLE.

Revenue.	RS.	*Expenditure.*	RS.
To sale of permits for grazing at Rs. 6,000 for 15 years.	90,000		
Total ..	90,000		..

V. MINOR FOREST PRODUCE WORKING CIRCLE.

Revenue.	RS.	*Expenditure.*	RS.
To sale of Minor Forest Produce lease units at Rs. 500 per annum for 15 years.	7,500		
Total ..	7,500		..

VI. PROTECTION WORKING CIRCLE.

Revenue.	RS.	*Expenditure.*	RS.
Nil.		Nil.	

VII. MISCELLANEOUS.

Revenue.	RS.	*Expenditure.*	RS.
(1) To sale of metal, stones, etc., on seigniorage at Rs. 100 per annum.	1,500	(1) By fire protection operation at Rs. 200 per annum.	3,000
(2) To revenue by sale of growth from old casuarina plantations 2,143 acres at Rs. 50 per acre.	1,07,150	(2) Construction of buildings for housing District Forest Office and range offices and range quarters at a cost of Rs. 50,000 suggested—cost of annual maintenance for these buildings, when constructed.	5,000
		(3) Construction and maintenance of motorable cart track at Rs. 1,000 per annum for the last 10 years.	10,000
.. .. ..		(4) By maintenance of boundaries and cairns at Rs. 400 per annum for 15 years.	6,000
.. .. ..		(5) Stores—renewal and replacement and fresh purchase.	300
Total ..	1,08,700	Total ..	24,300

SOUTH ARCOT DISTRICT.

I. Casuarina Conversion Working Circle.

Revenue.	RS.	*Expenditure.*	RS.
(1) To sale of 1,312 acres of casuarina plantations at Rs. 300 per acre.	3,93,600	(1) By cost of planting 2,031 acres of casuarina at Rs. 107 per acre.	2,17,300
(2) To sale of produce from prunings, after paying cost of pruning at Rs. 3 per acre on 1,312 acres.	3,900	(2) By demarcation of plantation with plantations boards at Rs. 6 per annum for 15 years.	100
		(3) By cost of nursery seedlings for planting 2,031 acres at Re. 1 per acre.	2,000
Total ..	3,97,500	Total ..	2,19,400

II. Fuel Working Circle.

Revenue.	RS.	*Expenditure.*	RS.
(1) To sale of 1,827 acres for fuel coupes during 15 years at Rs. 10 per acre.	18,300	(1) By demarcation of felled fuel coupes in 3 acres at Rs. 10 per series per annum, Rs. 450 or	500
Total ..	18,300	Total ..	500

III. Manure Leaf Working Circle.

Revenue.	RS.	*Expenditure.*	RS.
(1) To sale of permits for manure leaf from one annual coupe of about 333 acres in Athipakkam Reserve Forest at Re. 0-6-0 per acre.	1,900	(1) By cost of demarcating one annual coupe at Rs. 10 per coupe for 15 years.	150
		(2) By artificial regeneration of 100 acres with manure leaf species in 15 years at Rs. 72 per acre.	7,200
Total ..	1,900	Total ..	7,350

IV. Grazing Working Circle.

Revenue.	RS.	*Expenditure.*	RS.
(1) To sale of grazing permits at Rs. 18,000 per annum for 15 years.	2,70,000		
Total ..	2,70,000		..

V. Minor Forest Produce Working Circle.

Revenue.	RS.	*Expenditure.*	RS.
(1) To sale of minor forest produce lease units at Rs. 200 per annum for 15 years.	3,000		
Total ..	3,000		..

VI. Protection Working Circle.

Revenue.	RS.	*Expenditure.*	RS.
Nil.		Nil.	

VII. Miscellaneous Regulations.

Revenue.	RS.	*Expenditure.*	RS.
(1) To sale of metal, stones, etc., on seigniorage at Rs. 40 per annum for 15 years.	600	(1) Construction of buildings during the last nine years at a capital cost of Rs. 16,000 is suggested, maintenance for the above—lump sum.	2,000
(2) To sale of growth from old casuarina plantations 1,830¾ acres at Rs. 50 per acre.	91,500	(2) By regeneration operations in Malattar river bed for 15 years at Rs. 500 per annum.	7,500
		(3) By regeneration operations in Kunnimedu, Settikuppam, Pudupet, Porto Novo and Ariyakoshti unreserves at Rs. 500 per annum for 15 years.	7,500
		(4) By regeneration operations in Kiliyanur unreserves at Rs. 500 per annum for 15 years.	7,500
		(5) By maintenance of boundaries at Rs. 60 per annum for 15 years.	900
Total ..	92,100	Total ..	25,400

370. The following statement shows the estimated revenue from other sources for the period 1949–50 to 1963–64 based on the actuals of the year 1947–48 (rounded off to the nearest hundred rupee) :—

	RS.
(i) Drift and waifwood and confiscated forest produce	1,100
(ii) Fines and forfeitures	9,700
(iii) Rents of buildings (rent for residential portions of combined Range Offices and quarters, etc).	3,000
(iv) Other sources including compounding fees	74,000
Total ..	87,800

371. The following statement shows the estimated expenditure on establishment based on actuals for 1947–48 which are furnished below :—

		RS.
(i) Pay of District Forest Officer		13,250
(ii) Pay of Executive and Ministerial Establishment		49,545
(iii) Dearness allowance		25,229
(iv) Allowances—	RS.	
Travelling allowance	8,811	
Fixed travelling	3,578	
Other compensatory	152	
		12,541
(v) Contingencies		4,290
Total expenditure for one year		1,04,855
Estimated expenditure for 15 years		15,72,800

372. *Direction expenses.*—The cost of the Conservator of Forests, Salem Circle, and his Establishment came to Rs. 59,463 during 1946–47 Apportioning the expenditure equally among the eight divisions in the circle, the share of the Direction Expenditure debitable to this division may be taken as equal to Rs. 7,433 or 7,400.

For 15 years, the direction charges may be estimated at Rs. 7,400 × 15 = 1,11,000.

Abstract of estimated revenue and expenditure for the working plan period 15 of years.

	Revenue.			*Expenditure.*		
Working circle.	*Chingleput district.* RS.	*South Arcot district.* RS.	*Total.* RS.	*Chingleput district.* RS.	*South Arcot district.* RS.	*Total.* RS.
I. Casuarina Conversion Working Circle.	8,42,600	3,97,500	12,40,100	6,35,700	2,19,400	8,55,100
II. Fuel Working Circle ..	..	18,300	18,300	1,04,400	500	1,04,900
III. Manure Leaf Working Circle.	19,700	1,900	21,600	80,700	7,350	88,050
IV. Grazing Working Circle.	90,000	2,70,000	3,60,000	..	..	..
V. Minor Forest Produce Working Circle.	7,500	3,000	10,500	..	..	..
VI. Protection Working Circle.	..	..	..	..	..	..
VII. Miscellaneous Regulations.	1,08,700	92,100	2,00,800	24,300	25,400	49,700
VIII. Other sources ..	..	..	87,800	..	..	..
				Establishments.	..	15,72,800
				Direction charges.	..	1,11,000
		Total ..	19,39,100		Total ..	27,81,550

	RS.
Estimated average annual revenue ..	1,29,300
Estimated average annual expenditure.	1,85,400
Estimated deficit per annum ..	56,100

SECTION 2.—COST OF THE WORKING PLAN.

373. The cost of preparing this working plan is Rs. 38,719 as will be seen from the particulars furnished below :—

Particulars.	Amount. RS.	Particulars.	Amount. RS.
Conservancy and Works ..	140	Other compensatory allowances	1,351
Pay of Officers	18,438	Contingencies	581
Pay of Establishment	6,418		
Dearness allowance	3,492	Total ..	38,719
Travelling allowance	8,112		
Fixed travelling allowance ..	187		

As the working plan covers a total area of 1,68,929 acres of reserved forests, reserved lands, unreserved lands and forests now under panchayat management, the cost works out to Re. 0–3–8 per acre.

P. VENKATARAMANY,
Working Plan Officer, Chingleput Division.

S. R. RAO,
Conservator of Forests, Working Plan Circle.

CHAPTER XXI.

SUMMARY OF PRESCRIPTIONS.

CHINGLEPUT REVENUE DISTRICT.

CHAPTER I:—BASIS OF PROPOSALS.

Paragraph.

1 *Objects.*—The forests to be managed by exploiting them to a limited extent, for fuel, minor forest produce and manure leaves, by supplying agricultural, pastoral and domestic needs of the surrounding population, by improving quality of the forests by introduction of valuable species and by conserving the forests on low hills and denuded hill slopes. 96

2 *Working circles.*—Six working circles have been consitututed. A statement showing the distribution of the working circles is given. 98

3 *Period of plan.*—Fifteen years from 1st April 1949 99

CHAPTER II.—WORKING PLAN FOR THE CASUARINA CONVERSION WORKING CIRCLE.

1 *Constitution.*—Suitable selected areas fit for growing casuarina in reserved forests, unreserves and reserved land which now support a degraded type of deciduous tree-growth. 100

2 *Planting series.*—Six series have been formed with an aggregate area of 2,953 acres of which existing casuarina plantations cover 1,091 acres and 1,862 acres are scrub jungle forest. 107, 108

3 *System.*—Clear-felling and planting with casuarina 111

4 *Rotation.*—Eight years 114

5 *Espacement.*—Six feet by six feet 116

6 *Preparation of area.*—The growth of the area to be clear-felled in April—unsaleable material to be evenly spread-over the area and burnt—the area to be then ploughed with a bull-dozer tractor. Make contour-bunds of two feet width and 1½ feet high at intervals of 2 or 3 chains to arrest the rapid flow of rain-water. 117

7 *Artificial regeneration of casuarina.*—Casuarina cones to be collected just before they burst, dry them on a cloth spread-over a country cot and collect seeds after the cones burst. 119

8 *Nursery.*—The required nurseries will be formed in December near the middle of each year's planting area and fence them. A well will be dug in the middle of the site. After the preparation of the soil, casuarina seeds will be sown broadcast. After the sowing, fine sand or ash is sprinkled over the seeds and the nursery beds profusely watered both in the morning and in the evening for about three weeks. 120

9 Nurseries to be kept clear of all weeds. When taking the seedlings from the nursery bed, the beds should be profusely watered and the plants dug out. 121

10 *Planting.*—Healthy casuarina seedlings with a shoot of not less than 18 inches and a root of not less than 12 inches will be planted in pits of one-foot cube, in holes, in September-November, at an espacement of three feet by three feet. 123

11 *Soil working.*—To be done at frequent intervals 125

12 *Replacement of casualities.*—To be replaced in the first year 126

13 *Tending.*—Two weedings to be done in October-December. Soil working to be done in January. 127

14 *Pruning.*—Depending on the rate of growth of the plants, pruning will be done in the fourth or fifth year. 128

15 *Thinning* will be done at the discretion of the District Forest Officer. 130

16 *Final fellings.*—The casuarina plantation due for final fellings will be sold in public auction in February with lease period for the following financial year. 132

17 The entire standing growth will have to be up-rooted and the area levelled .. 133

18 *Fencing.*—The plantation should be fenced in the first year 134

19 *Demarcation.*—The plantations will be demarcated by planting stones at prominent corners, showing the area and the year of planting. 136

20 *Grazing.*—Plantations will be closed to grazing including the year of planting .. 137

Paragraph

21 *Fungus.*—All dead and dying trees in the plantations will be extracted and removed speedily as a precautionary measure against fungus attack. 138

22 *Statistics.*—Figures of yield and costs of plantation are to be accurately maintained. 139

23 *Rain gauges.*—Planter's rain gauges are to be installed in the centre of each of the coupes under artificial regeneration during the period from 1st July to 30th June following. 140

24 *Control.*—Control book, record of works, plantations journal and ledger, nursery journal and ledger, control journal and control maps are to be maintained. 141

CHAPTER III.—WORKING PLAN FOR FUEL PLANTATION WORKING CIRCLE.

1 *Constitution.*—The working circle comprises of selected areas in 10 reserved forests suitable for concentrated re-generation operations with miscellaneous fuel species. 142

2 *Planting series.*—Five planting series have been formed 145

3 *System.*—Clear-felling and planting with suitable fuel species 147

4 *Rotation.*—Thirty years 148

5 *Planting* will be done departmentally. Regeneration will also be done by kumridars, if possible, in addition to departmental planting. 150

6 *Departmental plantation.*—The area to be demarcated in January and the tree-growth felled before the end of March. After felling, the tree-growth, the ground is to be worked up well. 152

7 The saleable material to be disposed of; the debris to be evenly spread over the strips and burnt in April-May; the soil to be worked by bull-dozer to a depth of 9 to 12 inches. Seeds of the specified species are to be sown. 15

8 No sowing will be done in the intervening belt. Subsequent soil working and tending will be done by the beat staff on a sanctioned estimate. 154

9 Casualty replacement in poorly stocked lines will be done departmentally by a second sowing. The tree crop will be thinned as and when necessary. 155

10 *Regeneration by 'kumri' method.*—If kumridars become available, land will be granted, to them up to 25 acres in the aggregate in any one year in addition to the normal departmental planting. The grant of land should be covered by a permit under section 21 of the Madras Forest Act. 156

11 Kumridars are to sow seeds of the specified species after clear-felling the area and preparing the ground. The land will be demarated and surveyed and handed over to the kumridar not later than January. It will be in the possession of the kumridar for not more than five years. 157

12 Sowing of the tree species will be done in belts. The kumridar will coloborate the intervening space between the belts with agricultural crop. Weeding the tree lines will be done by the kumridar. Castor will not be allowed to be raised. 581

13 The kumridar will soil-work the tree lines twice in the first year of growth. Subsequent soil working will be done departmentally. The kumridar will be allowed to coloborate the land for five years. 159

14 When the kumridar finally relinquishes the land, the intervening belt between the tree lines will be ploughed by him and sown with seeds of fodder grass and shrubs. 160

15 *Grazing.*—The regenerated coupes will be closed to grazing for five years, including the year of formation. 161

16 *Demarcation.*—The annual coupe should be demarcated before planting 162

17 *Control.*—Control book, fuel plantation Journal and Ledger, Record of Works, Plantation Map and Control Journal should be maintained. 163

CHAPTER IV.—WORKING PLAN FOR MANURE LEAF WORKING CIRCLE.

1 *Constitution.*—The manure leaf working circle comprises of the plains portion of the reserved forests. 164

2 *Area.*—The area of the working circle is 9,800 acres and it is divided into eight felling series with 3 coupes in each series. 166

3 *System.*—The trees and shrubs will be lopped, with the exception of specified species; no branches thicker than a man's thumb shall be cut. 168

4 *Felling cycle.*—Three years 169

5 One coupe in each series to be worked annually 171

6 Permits for the removal of manure leaf from coupes of the year, at prescribed rates, will be issued by Foresters. 172

Paragraph

7 Removals shall take place only between sunrise and sunset 173

8 *Artificial regeneration.*—The experimental artificial regeneration of manure leaf species started in Kattur reserved forest of Tirukoilur range will be continued. 174

9 In the areas taken up for artificial regeneration, six-feet wide strips will be laid out 22 feet apart. The strips to be clear-felled and the slash burnt in April-May Soil working to be done in June. Seeds of the specified manure leaf species to be sown in July in lines in the centre of the cleared strips. In the uncleared strips, seeds of *Cassia auriculata* and *Dodonea viscosa* will be sown broadcast. 176

10 Artificial regeneration may also be attempted through kumridars, if available .. 178

11 The coupes under artificial regeneration to be closed to grazing for three years including the year of regeneration. 180

12 Control Book, Manure Leaf Plantation Journal and Ledger, Record of Works and Control Journal to be maintained. 182

CHAPTER V.—WORKING PLAN FOR MINOR FOREST PRODUCE WORKING CIRCLE.

1 *Constitution.*—The minor forest produce working circle comprises of all the reserved forests, unreserved lands and Maiyur Reserved land. 183

2 The minor forest produce will be exploited through the agency of the contractors. Each range will form a lease unit. The lease period will be from the first of July to the thirtieth of June except in the case of cashewnut and sarapappu, for which the lease period will be from the first of January to the thirtieth of June. 186

3 Control book and records of works to be maintained 187

CHAPTER VI.—WORKING PLAN FOR GRAZING WORKING CIRCLE.

1 *Constitution.*—The grazing working circle extends over all the Reserved Forests, reserved lands and unreserves of the division, with the exception of specified areas closed to grazing. 188

2 Areas under regeneration, areas which the District Forest Officer may, for valid reasons, close to grazing and areas which the District Forest Officer may close to grazing as a punitive measure for unauthorized burning, will be closed to grazing. 189

3 Grazing will be regulated by licensing cattle to graze in the forests on payment of prescribed fees. 191

4 Grazing year will be from 1st July to 30th June following. Goats will not be permitted to graze. 192

5 The forests will be closed to grazing during July and August 193

6 In 1954, the District Forest Officer will, at his discretion and in consultation with the territorial Conservator introduce rotational grazing or other systems. 195

7 Control Book, Record of Works and Control Journal will be maintained 196

CHAPTER VII.—WORKING PLAN FOR THE PROTECTION WORKING CIRCLE.

1 *Constitution.*—The protection working circle comprises of all the reserved forests of the division not included in any of the working circles, except the minor forest produce and grazing working circles. 197

2 The area of the working circle is 35,090 acres 198

3 The reserved forests included in the working circle will be given complete rest from exploitation of any kind except grazing of cattle, collection of grass and minor forest produce. 200

CHAPTER VIII.—MISCELLANEOUS REGULATIONS.

1 Fire tracing operations to be done in March for old casuarina plantations, if considered necessary. 202

2 The question of construction of residential quarters for range officers to be taken up in 1954–55. 204

3 The question of construction of residential quarters for Foresters, Forest guards and watchers to be taken up in 1954–55. 205

4 The question of construction of cart-tracks branching from main roads to be taken up in 1954–55. 206

5 A research centre to be opened in a suitable locality under the direct supervision and control of the Provincial Silviculturist, with regard to the artificial regeneration of casuarina, etc., species in the plains portions of the Reserved Forests, and afforestation of denuded hill slopes by the contour trench or other suitable methods. 207

6 The old casuarina plantations, which have not been included in the casuarina conversion working circle, will be maintained until the rotation age of eight years and then clear felled. 208

7 The discrepancies pointed out as a result of verification of the boundaries of the reserved forests to be attended to. 209

8 Nemeli unreserved to be got notified under section 16 of the Forest Act. Vadapatnam, and Kodapatnam unreserves will continue as unreserves under the control of the Forest Department. 210

Chapter IX.—Working Plan for Panchayat Reserves in Chingleput District now under the management of the Panchayats, when they are resumed for management by the Forest Department.

1 When the forests are resumed, they may be formed into beats and added to the existing Chingleput and Sriperumpudur ranges. 215

2 There will be no exploitation of any kind in the forests, except that grazing will be allowed on permits to the cattle of the surrounding villages. 216

PART II.

SOUTH ARCOT REVENUE DISTRICT.

Chapter X.—Basis of Proposals.

1 *Objects.*—Protection and conservation of the forests by enforcing rigid protection to exploit the forests for fuel minor forest produce and manure leaves, to supply the agricultural, pastoral and domestic needs of the surrounding population, to improve the quality of the forests by regeneration and to conserve the forests on the low hills and denuded slopes. 218

2 Six working circles have been formed 220

3 The Working Plan will be in force for 15 years from the 1st April 1949 .. 221

Chapter XI.—Working Plan for the Casuarina Conversion Working Circle.

1 *Constitution.*—The casuarina conversion working circle includes suitable selected areas in Markanam, Agaram, Kille and Pichavaram reserved forests. 222

2 The working circle has an aggregate area of 1,010 acres 227

3 There will be two planting series 228

4 Details of areas to be planted in each year are furnished 230

5 The Silvicultural system will be clear-felling and planting 231

6 Rotation will be eight years 234

7 An espacement of six feet by six feet will be adopted 235

8 The growth on the annual area to be clear-felled in April. Unsaleable material to be evenly spread over the area and burnt. The area will then be ploughed with a bulldozer tractor. Contour bunds of two feet width and 1½ feet high at intervals of 2 or 3 chains to be made to arrest the rapid flow of rain-water. 236

9 Casuarina comes to be collected just before they burst and dried on a cloth spread over a country cot and seeds collected after the cones burst. 238

10 *Nursery.*—The required nurseries will be formed in December near the middle of each year's planting area and fence them. A well will be dug in the middle of the site. After the preparation of the soil, casuarina seeds will be sown broadcast. After the sowing, fine sand or ash is sprinkled over the seeds and the nursery beds profusely watered both in the morning and in the evening for about three weeks. 239

11 Nurseries to be kept clear of all weeds. When taking the seedlings from the nursery bed, the beds should be profusely watered and the plants dug out. 240

12 *Planting.*—Healthy casuarina seedlings with a shoot of not less than 18 inches and a root of not less than 12 inches will be planted in pits of one foot cube in holes, in September—November at an espacement of six feet by six feet. 242

13 Plants will be watered for 10 days after planting at half a potful both in the morning and evening, unless there is rain. For the next 10 days, they will be watered on every alternate evenings. Thereafter, watering will be done twice a week. No watering may be required after first month of planting till the end of the rainy season. 246

14 *Replacement of casualties.*—To be replaced in the first year 248

15 *Tending.*—Two weedings to be done in October—December. Soil working to be done in January. 249

16 *Pruning.*—Depending on the rate of growth of the plants, pruning will be done in the fourth or fifth year. 250

17 *Thinning.*—Will be done at the discretion of the District Forest Officer 252

		Paragraph
18	*Final fellings.*—The casuarina plantation due for final fellings will be sold in public auction in February with lease period for the following financial year.	254
19	The entire standing growth will have to be up-rooted and the area levelled ..	255
20	*Fencing.*—The plantation should be fenced in the first year	259
21	*Wells.*—Wells will be dug at one well for every three acres	257
22	*Demarcation.*—The plantations will be demarcated by planting stones at prominent corners, showing the area and the year of planting.	258
23	*Grazing.*—Plantations will be closed to grazing including the year of planting ..	259
24	*Fungus.*—All dead and dying trees in the plantations will be extracted and removed speedily as a precautionary measure against fungus attack.	260
25	*Statistics.*—Figures of yield and costs of plantation are to be accurately maintained.	261
26	*Rain guages.*—Planter's rain guages are to be installed in the centre of each of the coupes under artificial regeneration during the period from 1st July to 30th June following.	262
27	*Control.*—Control book, record of works, plantation journal and ledger, nursery journal and ledger, control journal and control maps are to be maintained.	263

CHAPTER XII.—WORKING PLAN FOR FUEL WORKING CIRCLE.

1	*Constitution.*—The working circle comprises of selected areas of reserved forests suitable in the vicinity of certain towns and villages, where the demand for firewood exists.	264
2	Area of the working circle is 4,210 acres	265
3	*Felling series.*—Three felling series have been formed	266
4	*Rotation.*—Forty years	268
5	*System.*—Simple coppice with the reservation of specified minor forest produce yielding species.	269
6	The felling to be regulated by area. Each felling series has been divided into 40 coupes. The annual coupes to be surveyed and demarcated before sale.	270
7	One coupe in each felling series will be sold each year	271
8	Coupes to be divided into strips for felling	272
9	The fellings to be made through the agency of contractors	273
10	Coupes to be sold in public auction every year	274
11	Arrear areas to be surveyed and areas computed at the close of the lease period. The contractor of the next coupe to be offered the arrear area of the previous coupe.	275
12	Felling to be done strip by strip. All fellings to be made by the coolies of the coupe contractor who or whose agent shall be present during the fellings. All thorny climbers and shrubs to be cut back to ground level. Cutting of the trees must be close to the ground. Bark must not be separated from the woody portion of stool.	276
13	Felled firewood shall, prior to its removal, be billetted and stacked to the size of 5′ × 4′ × 2½′.	277
14	Trees yielding small timber shall, on felling, be hammer marked	278
15	Regeneration in felled coupes will be from coppice	280
16	The felled coupe to be demarcated with stone slabs	281
17	*Grazing.*—The felled coupes will be closed to grazing for four years, including the year of felling, cutting and removal of grass from 'closed' coupes may be permitted.	282
18	Coupe contractors to submit monthly statement of yield of firewood and timber.	284
19	*Control.*—Control book, record of works should be maintained	285
20	Control maps are to be posted	286

CHAPTER XIII.—WORKING PLAN FOR MANURE LEAF WORKING CIRCLE.

1	*Constitution.*—The manure leaf working circle comprises of the plains portion of Athipakkam Reserved Forests.	287
2	*Area.*—The area of the working circle is 1,070 acres and forms one felling series ..	289
3	*System.*—The trees and shrubs will be lopped, with the exception of specified species ; no branches thicker than a man's thumb shall be cut.	291
4	*Felling cycle.*—Three years	292

Paragraph.

5 One coupe to be worked annually 293

6 Permits for the removal of manure leaf from coupes of the year, at prescribed rates will be issued by foresters. 295

7 Removals shall take place only between sunrise and sunset 296

8 *Artificial regeneration.*—The experimental artificial regeneration of manure leaf species started in Kattur reserved forest of Tirukkoyilur range will be continued. 297

9 In the areas taken up for artificial regeneration six feet wide strips will be laid out 22 feet apart. The strips to be clear-felled and the slash burnt in April-May. Soil working to be done in June. Seeds of the specified manure leaf species to be sown in July in lines in the centre of the cleared strips. In the uncleared strips, seeds of *Cassia auriculata* and *Dodonea viscosa* will be sown broadcast. 299

10 Artificial regeneration may also be attempted through kumridars, if available .. 301

11 The coupes under artificial regeneration to be closed to grazing for three years including the year of regeneration. 303

12 Control book, manure leaf plantation journal and ledger, record of works and control journal to be maintained. 305

CHAPTER XIV.—WORKING PLAN FOR MINOR FOREST PRODUCE WORKING CIRCLE.

1 *Constitution.*—The minor forest produce working circle comprises of all the reserved forests and unreserved lands. 306

2 The minor forest produce will be exploited through the agency of the contractors. 309

3 Each range will form a lease unit. The lease period will be from the first of July to the thirtieth of June except in the case of cashewnut and sarapappu, for which the lease period will be from the first of January to the thirtieth of June. 310

4 Control book and records of works to be maintained 311

CHAPTER XV.—WORKING PLAN FOR GRAZING WORKING CIRCLE.

1 *Constitution.*—The grazing working circle extends over all the reserved forests, reserved lands and unreserves of the division, with the exception of specified areas closed to grazing. 312

2 Areas under regeneration, areas which the District Forest Officer may, for valid reasons, close to grazing and areas which the District Forest Officer may close to grazing as a punitive measure for unauthorized burning, will be closed to grazing. 313

3 Grazing will be regulated by licensing cattle to graze in the forests on payment of prescribed fees. 315

4 Grazing year will be from 1st July to 30th June following. Goats will not be permitted to graze. 316

5 The forests will be closed to grazing during July and August 317

6 In 1954, the District Forest Officer will, at his discretion in consultation with the territorial conservator introduce rotational grazing or other systems. 319

7 Control book, record of works and control journal will be maintained 320

CHAPTER XVI.—WORKING PLAN FOR THE PROTECTION WORKING CIRCLE.

1 *Constitution.*—The protection working circle comprises of all the reserved forests of the division not included in any of the working circles, except the minor forest produce and grazing working circles. 321

2 The area of the working circle is 4,085 acres 322

3 The reserved forests included in the working circle will be given complete rest from exploitation of any kind except grazing of cattle, collection of grass and minor forest produce. 324

CHAPTER XVII.—MISCELLANEOUS REGULATIONS.

1 No fire protection operations are to be done 325

2 The question of construction of residential quarters for Range Officers to be taken up in 1954–55. 327

		Paragraph.
3	The question of construction of residential quarters for foresters, forest guards and watchers to be taken up in 1954–55.	328
4	The question of construction of cart-tracks branching from main roads to be taken up in 1954–55.	329
5	*Malattar river-bed.*—The waste lands of the Malattar river bed to be artificially regenerated with *Prosopis juliflora* at the rate of one acre in each of the three series of Edayar gramam and Iruvelpattu during the first five years commencing from 1949–50, and thereafter larger areas up to 50 acres each year in each of the Edayar, Tiruvannainallur gramam, Iruvelpattu and Thiruthorayur series, if the plantations raised in the first five years prove successful.	330
6	The unreserves of Kunnimedu, Settikuppam, Pudupet, Porto Novo and Ariyakoshti will be regenerated with *Prosopis juliflora*, *Pithocolobium dulce* and *Dalbergia multiflora*.	331
7	The Kiluyanur unreserve will be regenerated with *Acacia arabica*	332
8	The old casuarina plantations in Athipakkam, Kurumbaram and Komalampattu reserved forests to be maintained till they attain the age of eight years and then clear-felled. The areas are not to be replanted with casuarina.	334
9	The coconut tope in Kille Reserved Forest to be maintained and the usufruct sold in auction every year.	335
10	The defects noticed as a result of the verification of the boundaries of Agaram, Markanam, Kumalampattu, Kurumbaram, Kille, Pichavaram and Athipakkam reserved forests are to be rectified.	336
11	The specified unreserved lands should be reserved if afforestation with fast growing species in them proves successful.	337

CHAPTER XVIII.—WORKING PLAN FOR PANCHAYAT RESERVES IN CHINGLEPUT DISTRICT NOW UNDER THE MANAGEMENT OF THE PANCHAYATS, WHEN THEY ARE RESUMED FOR MANAGEMENT BY THE FOREST DEPARTMENT.

1	Fuel Working Circle will be formed over 28,141 acres	343
2	Artificial regeneration with fast growing fuel species will be attempted in addition to coppice regrowth in three felling series.	345
3	Manure leaf working circle will be formed over 9,625 acres	348
4	Artificial regeneration with manure leaf species will be done over 1,175 acres of reserved forests.	350
5	Minor forest produce working circle will be formed with 22 reserved forests of 61,704 acres in the aggregate.	351
6	Protection working circle will be formed comprising of the rest of the reserved forests of 51,102 acres in the aggregate.	352
7	The mango and tamarind tope, two acres in extent in Seedevi B Reserved Forest will be maintained.	353
8	The teak plantation in Gangavaram Reserved Forest, in three bits of seven acres in extent will be maintained.	354
9	The *Bassia latifolia* plantation, about two acres in extent, in Nangur Reserved Forest will be maintained.	355
10	The bamboo plantation, about two acres in extent, in Nangur Reserved Forest will be maintained.	356
11	The cashew tope, 75 acres in extent, in Velangulam Reserved Forest will be maintained.	357
12	The cashew tope, two acres in extent, in Kangiruppu Bit I Reserved Forest will be maintained.	358
13	The cashew tope, 18 acres, in Kangiruppu Bit II Reserved Forest will be maintained.	359
14	The area, 23 acres, in Pakkamalai Reserved Forest given to the ryots under grow more food scheme is to be resumed and cultivated under Kumri method.	361

FOR CHINGLEPUT AND SOUTH ARCOT DISTRICTS.

CHAPTER XIX.—ESTABLISHMENT AND LABOUR.

After taking over all the panchayat reserves under departmental control the number of watchers is to be increased.	365

APPENDIX I.

Preamble.—Whereas it is found expedient to describe the boundaries of the recently sanctioned Forest Division with headquarters at Chingleput as per G.O. Ms. No. 2292, Development, dated 13th June 1945, it is hereby notified as follows :—

NOTIFICATION.

In pursuance of the G.O. Ms. No. 2292, Development, dated 13th June 1945, the Governor of Madras is hereby pleased to notify the area, the boundaries of which are specified in the schedule noted below constituting as "Chingleput Forest Division with effect from 16th July 1945."

SCHEDULE.

Name.	*Area.*	*Names of Ranges in the Division and the date from which they were formed.*	*Boundary description of the Division.*
Chingleput Forest Division.	(*a*) Whole of revenue district of Chingleput excluding Tiruvallur and Ponneri taluks. (*b*) Whole of revenue district of South Arcot except Kallakurichi taluk. (*c*) That portion of Athipakkam reserved forest lying in the limits of North Arcot Revenue District.	Chingleput district, Chingleput Range, 4th July 1945. Tiruporur Range, 4th July 1944. Sriperumbudur Range, 4th July 1945. South Arcot district.	*North.*—Starting from the trijunction of Tiruvallur and Sriperumbudur taluks (Chingleput district) and Chittoor district, the boundary runs along the common taluk boundary between Tiruvallur, Ponneri, Sriperumbudur and Saidapet taluks, to the G.T.S. Ennore, No. 28. *East.*—Thence southwards along the eastern boundary of Chingleput and South Arcot districts following in the coast of Bay of Bengal till it meets the Tanjore district boundary. *South.*—Thence southwards and westwards along the southern boundary of South Arcot district to the trijunction of Kallakurichi and Vriddachalam taluks of South Arcot district and Tiruchirappalli district. *West.*—Thence northwards along western boundary of Vriddachalam and Tirukkoyilur taluks till meets Athipakkam reserved forest (B1) boundary and thence along the west north and east boundary of the said reserved forest, till it meets junction of Tirukkoyilur and Tiruvannamalai taluks, thence along the western boundary of Tirukkoyilur, Gingee and Tindivanam taluks of South Arcot district and Madurantakam, Kancheepuram and Sriperumbudur taluks of Chingleput district to the starting point.

APPENDIX II.

List of panchayat forests still under the management of the panchayats in Chingleput and South Arcot districts.

Serial number and name of reserved forest.	Area in acres.	Name of panchayat.	Grazing revenue.	Rental.
		CHINGLEPUT DISTRICT.		
		Chingleput taluk.		
			RS.	RS.
1 Appur and Extension	1,883	Appur	373	..
		Sriperumbudur taluk.		
2 Thandarai and Extension.	828	Thandarai	..	100
3 Pudupperi	359	Pudupperi	61	10
		Saidapet taluk.		
4 Mittanamalli	236	Under military occupation	..	..
5 Perumbakkam	114	Perumbakkam	59	10
6 Pulikaradu	185	....	..	..
7 Tambaram	251	Tambaram	74	200
8 Kovilpadugai and Extensions I and II.	772	Under military occupation	..	..
9 Tirumalaivoyal and Extensions I and II.	534	Tirumalaivoyal	60	35
		Madurantakam taluk.		
10 Acharapakkam	1,017	Acharapakkam	375	240
Total area	6,179			

APPENDIX II—*cont.*

Serial number and name of reserved forest.	Area in acres.	Name of panchayat.	Grazing revenue.	Rental.
			RS.	RS.
SOUTH ARCOT DISTRICT.				
Tindivanam taluk.				
1 Kilsevur	1,200	Kattalai	150	75
Cuddalore taluk.				
2 Kangiruppu Bit I	2,956	Annangarankuppam	220	20
3 Kangiruppu Bit II	2,579	Perperiyankuppam	2	50
Tirukkoyilur taluk.				
4 Swamimalai	4,015	Penniyandal	300	25
		Madampundi	159	190
5 Nathamur Bit I	4,500	Nathamur	504	400
6 Nathamur Bit II	3,683	Vallivalam	569	500
7 Sreedevi	2,772	Kunjaram	202	150
		Mandagapadi	322	250
8 Edaikkal	3,390	Edaikkal	552	320
9 Pandur	955	Mulasamudram	283	125
10 Sirupakkam	1,080	Sirupakkam	310	140
11 Alwarmalai	8,795	Pidagam	939	575
12 Kallamedu	1,030	Malligai	504	50
13 Thatchampattu	980	Marukambadi	90	100
14 Kunjaram	1,200	Kunjaram	203	150
15 Kuttadi	1,700	Senkurichi	240	132
16 Nayanur	1,639	Kallandal	147	200
Gingee taluk.				
17 Karai	1,697	Karai	185	185
18 Siruvadi	3,561	Sirukadambur	193	265
		Shevalporai	210	210
		Alampundi	193	195
		Perungappur	111	230
19 Kuthukadu	3,187	Sirukadampur	..	..
		Perungappur	..	..
		Pennampundi	100	100
20 Padipallam	3,601	Pennampundi (part)	..	..
		Padipallam	..	..
		Periyanur (part)	200	200
21 Gengavaram	6,627	Gengavaram (part)	224	250
		Thuthipattu	375	282
22 Pakkamalai	3,601	Perianur (part)	160	160
		Nallapillaipethal	150	115
		So-kuppam	174	200
		Sathavary	150	110
		Gangavaram (part)	..	..
23 Thandavarayasamudram.	787	Ananthapuram	75	75
24 Thurinjikadu	1,018	Malvanthangal	..	..
25 Adukkam	2,000	Virangipuram	250	250
Villupuram taluk.				
26 Melkondai	480	Vikravandi	144	58
27 Odayanatham	1,603	Nallapalayam	142	180
Vriddhachalam taluk.				
28 Nangur	1,694	Mapudur	421	300
29 Semakottai and Extension.	6,257	Manakollai	578	220
		Kotteri	145	75
30 Ammeri	862	Mudanai	150	40
31 Karmangudi	1,100	Nemanur	295	200
32 Kattumailur and Extension.	1,775	Kilakurichi	556	280
33 Velangulam	1,261	Velangulam	131	60
34 Parur and Extension	3,064	Parur	228	360
35 Narimanam	928	Kuppanatham	224	200
36 Kuppanatham	777			
Total	95,808			

APPENDIX III.

List of trees and shrubs found in Chingleput Forest Division.

Botanical name.	Tamil name.
Abrus precatorius	Kundumani.
Acacia arabica	Karuvelam.
Acacia ferruginea	Parambai.
Acacia intsia	Indu.
Acacia latronum	Anaimullu, Kakkodai.
Acacia leucophloea	Velvelam, Sarai.
Acacia sundra	Karungali.
Adina cordifolia	Manjakadambai.
Aegiceras corniculatum	Narikandam.
Aegle marmelos	Vilvamaram.
Agave americana	Kathalai.
Alangium lamarckii	Alingi.
Albizzia amara	Thurinji.
Albizzia lebbeck	Vagai.
Albizzia odoratissima	Karuvagai.
Anacardium occidentale	Munthri.
Anogeissus latifolia	Namai.
Anona squamosa	Seethapalam.
Asparagus racemosus	Thanuttukodi.
Atalantia monophylla	Kattu elimicha.
Avicennia offici-analis	Upatha.
Avicennia marina	Venkandan.
Azadirachta indica	Veppam.
Balsamodendron berryi	Mulkiluvai.
Bambusa arundinacea	Perumungil.
Bassia latifolia	Illuppai maram.
Bauhinia malabarica	Vellathi.
Bauhinia purpurea	Mandarai.
Bauhinia racemosa	Athi.
Bombax malabaricum	Elavamaram or Ilavu.
Borassus fiabellifer	Panamaram.
Bridelia retusa	Mulvengai.
Bruguiera conjugata	....
Buchanania latifolia	Saraiparuppu.
Butea frondosa	Elaiporasu.
Calotropis gigantea	Erukku.
Canthium didymum	Nekkini.
Capparis sepiaria	Kattu Kathiri.
Carissa spinarum	Sirukila.
Cassia auriculata	Avaram.
Cassia fistula	Konnai.
Cassia siamea	Ponavarai.
Cassia montana	Malai avaram.
Casuarina equisetifolia	Savukku.
Cheroxylon swietenia	Porasu.
Cleistanthus collinus	Oduvan, Odugu.
Cocos nucifera	Thennaimaram.
Dalbergia lanceolaria	Patchalai.
Dalbergia paniculata	Porapatchalai.
Dichrostachys cinerea	Vadathalai.
Dodonxa viscosa	Virali.
Elacodendron glaucum	Kanniramaram.
Erythrina indica	Muruku.
Erythrina suberosa	Mulmurukku.
Erythroxylon monogynum	Sembulichan.
Eugenia jambolana	Naga.
Euphorbia antiquorum	Kalli.
Euphorbia tirucalli	Tirucalli.
Excoecaria agallocha	Thillai.
Feronia elephantum	Vilamaram.
Ficus bengalensis	Ala.
Ficus glomerata	Athimaram.
Ficus hispida	Chona Athi.
Ficus religiosa	Arasu.
Flacourtia ramontchi	Kothu vela.
Flacourtia sepiaria	Sothukala.
Fluggea leucopyrus	Vepulam.
Gardenia latifolia	Kambil.

APPENDIX III—*cont.*

List of trees and shrubs found in Chingleput Forest Division—cont.

Botanical name.	Tamil name.
Gardenia turgida	
Cymnosperia montana	Kattangi.
Gyrocarpus americanus	Thanaku.
Hardwickia binata	Achamaram.
Hemidesmus indicus	Nannari.
Holarrhena antidysenterica	Eukkalaipalai, or Karupalai.
Ixora parviflora	Sulundu.
Jatropha curcas	Kattamanakku.
Loranthus longiflorus	Pulluruvi.
Leucas aspera	Thumbai.
Maba buxifolia	Irumbali.
Mangifera indica	Mamaram.
Memecylon edule	Kasan.
Mimusops hexandra	Palai maram.
Morinda tinctoria	Nona.
Murraya exotica	Kattu kariveppilai.
Murraya konigii	Kariveppilai.
Odina wodier	Odiya maram.
Opuntia dillenii	Nagatali.
Pandanus odaratissimus	Thazhai.
Peltophorum ferrugineum	Iyalvagai.
Phoenix humilis	Siru icha.
Phoenix sylvestris	Icha maram.
Phyllanthus emblica	Nelli.
Pithecolobium dulce	Kodukapuli maram.
Pithecolobium saman	Thoongumoonji maram.
Poinciana elata	Vadamudukki.
Pongamia glabra	Pungam.
Protium caudatum	Kiluvai.
Pterocarpus marsupium.	Vengai.
Pterolobium indicum	Karu indu, Indu.
Randia dumetorum	Karai.
Rhizophora mucronata	Kandal.
Santalum album	Chandanam.
Sapindus emarginatus	Boonthikottai.
Scutia indica	Kokkimullu.
Sonneratia apetala	Marama.
Strychnos nux-vomica	Etti.
Strychnos potatorum	Thethankottai.
Sueda fruiticosa	Umri.
Tamarindus indica	Pulia maram.
Tectona grandis	Thekku.
Terminalia arjuna	Vellamaruthu, Nirmaddi.
Terminalia bellerica	Thanic.
Thespesia populnea	Puvarasu.
Toddalia aculeata	Kattu milagu.
Vitex negundo	Nochi.
Vitis quadrangularis	Puranai.
Webera corymbosa	Tharani.
Wrightia tinctoria	Palai.
Wrightia tomentosa	Veppala.
Zizyphus jujuba	Yelandai
Zizyphus oenoplia	Churaimullu.
Zizyphus xylopyrus	Kottai Yelandai.

APPENDIX IV.

FORM I.

Control Book—Control fellings in Casuarina Working Circle (*both districts*).

Prescribed :—The area to be exploited annually is laid down. The areas will be leased to a conractor for clearfelling and uprootal of stumps.

Prescribed for felling.			Actually felled.			Yield.		Remarks.
Year. (1)	Locality. (2)	Area. (3)	Year. (4)	Locality. (5)	Area. (6)	Kind. (7)	Quantity. (8)	(9)

APPENDIX IV—*cont.*

FORM II.

***Control Book**—Control of Planting Operations in Casuarina Conversion Working Circle (both districts).*

Prescribed :—The area to be planted annually is laid down will be the same as the area clear-felled in the previous year.

Prescribed for planting.			*Actually planted.*			*Pruning and yield.*			Remarks.
Year.	Locality.	Area.	Year.	Locality.	Area.	Year of pruning.	Kind of produce obtained.	Yield of produce obtained.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

FORM III.

Plantation Journal and Ledger—Casuarina Conversion Working Circle (both districts).

1 Sketch of Plantation on 16 inches to 1 mile

2 Series. Area

3 Method of formation with dates—
  - (*a*) clear-felling
  - (*b*) levelling
  - (*c*) digging wells

4 Method of planting dates—
  - (*a*) Aligning and pittings
  - (*b*) Planting
  - (*c*) Watering
  - (*d*) Soil working
  - (*e*) Replacement of casualties

5 Cultural operations—
  - (*a*) Pruning
  - (*b*) Miscellaneous

6 Result of enumeration of survivals under dates.

7 Daily wages of coolies and daily outturn of plants watered

8 Notes on conditions of plantation by inspecting officers

9 Plantation Ledger showing monthly record of expenditure

Year and month.	Preparation of area.		Planting.			Watering.					Rainfall.	
	Cutting coppice shoots and ploughing and levelling.	Construction and repairs to wells.	Aligning and pitting.	Planting.	Replacement of casualties.	First fifteen days.	Alternate day watering up to end of December.	Once in four days watering up to end of June.	Miscellaneous.	Progressive total.	Inches.	Number of rainy days.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13

FORM IV.

Nursery Journal and Ledger.

1 Locality with sketch on a scale of 16 inches to 1 mile

2 Size of Nursery

3 Number of beds

4 Size of beds

5 Preparation of beds—including manuring

6 Date of sowing and quantity of seeds sown

7 Method of amount of watering and tending

8 Dates of removal of plants and number of plants removed

9 Cost of production of seedlings per 1,000

10 Ledger cost

Year and month	Cost of formation.					Sowing.				
	Levelling.	Fencing.	Manuring	Formation of beds.	Construction and repairs of wells.	Cost of seeds.	Sowing.	Watering cost.	Progressive total.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	

APPENDIX IV—*cont.*

FORM V.

Control Book for Planting in Fuel Plantation Working Circle.

Prescribed :—Planting will be done in 10 acres in each series during the first three years and planting area increased up to 50 acres subsequent years with the approval of territorial Conservator.

Prescribed.				Done.				
Area of felling series. (1)	Reserve. (2)	Bit or locality. (3)	Area. (4)	Year. (5)	Reserve. (6)	Bit or locality. (7)	Area planted. (8)	Progressive total. (9)

FORM VI.

Fuel Plantation Journal and Ledger in Fuel Plantation Working Circle (*Chingleput district*).

1 Series and year of formation, area .. ..

2 Method of formation—
- (*a*) Clear felling and burning .. ..
- (*b*) Soil preparation .. ..

3 Method of sowing and planting— .. ..
- (*a*) Aligning of strips .. ..
- (*b*) Date of original sowing and resowings with species and quantity of seed sown ..
- (*c*) Planting of pot plants .. ..
- (*d*) Weeding and soil working. .. .. ..

4 If Kumri system is practised, furnish details here .. ..

5 Notes by Inspecting Officers—
(Stocking of plants and height growth should be noted)

6 Ledger of cost .. ..

Year and month.	Preparation of Area.		Sowing and planting.							
(1)	Clear felling and burning. (2)	Working soil. (3)	Cost of bed. (4)	Sowing and resowing. (5)	Cost of pot plants. (6)	Cost of planting. (7)	Weeding and soil working. (8)	Total cost. (9)	Rainfall in inches. (10)	Remarks. (11)

FORM VII.

Control Book for Fuel Working Circle (*South Arcot district*).

Provisions of the plan.					Results of operations.							
Year.	Locality to be felled.					Locality to be felled.						
(1)	Felling Series. (2)	Coupe number. (3)	Area in acres. (4)	Type of felling. (5)	Year. (6)	Felling series. (7)	Coupe number. (8)	Area in acres. (9)	Type of felling. (10)	Yield of fuel. (11)	Sale price. (12)	Remarks. (13)

FORM VIII.

Control Book for Manure Leaf Working Circle (*both districts*).

Prescriptions of the plan.				Results of operations.							
								Revenue realized by issue of permits.			
Year. (1)	Felling series. (2)	Coupe. (3)	Area. (4)	Year. (5)	Felling series. (6)	Coupe. (7)	Area. (8)	Cart-loads. (9)	Headloads. (10)	Revenue. (11)	Remarks. (12)

APPENDIX IV—*cont.*

FORM IX.

Manure leaf plantation journal and ledger—Manure leaf Working Circle (both districts).

1 Series and year of formation, area.

2 Method of Formation

- (*a*) Clear fellings and burning
- (*b*) Soil preparation

3 Method of sowing and planting—

- (*a*) Aligning of strips
- (*b*) Date of original sowing and resowings with species and quantity of seed sown
- (*c*) Planting of cuttings
- (*d*) Weeding and soil working

4 If Kumri system is practised, furnish details here

5 Notes of Inspecting Officers—

(Stocking of plants and height growth should be noted)

6 Ledger of cost

Year and month.	Preparation of areas.		Sowing and planting.							
	Clear felling and burning.	Working soil.	Cost of seed.	Sowing and resowing.	Cost of cuttings.	Cost of planting.	Weeding and soil working.	Total cost.	Rainfall in inches.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

FORM X.

Control Book for grazing Working Circle (both districts).

Year.	Prescription of the Working Plan Area prescribed for closure to grazing.							Results of operations—Areas actually closed to grazing.								
	Permanent.			Periodical.				Permanent.			Periodical.					
	Reserved forest.	Compartment coupe or locality.	Area.	Working circle.	Felling series.	Coupe number.	Area.	Reserved forest.	Compartment coupe or locality	Area.	Working circle.	Felling series.	Coupe number.	Area.	Burnt area closed for recouperation.	Remarks—Furnish number of cattle grazed and revenue realized.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)

FORM XI.

Control Book for minor forest produce Working Circle (both districts).

Year.	Prescriptions of the Working Plan.				Results of operations.							
										Outturn.		
	Kind of produce.	Unit or locality for collection.	Method of exploitation.	Area in acres.	Year.	Kind of produce.	Unit or locality of collection.	Method of exploitation.	Revenue realized.	Kind of produce.	Yield.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)

APPENDIX IV—*cont.*

FORM XII.

Record of works (for all working circles except Protection working Circle in both the districts).

Provisions of working plan.				Work done.					Remarks.
Year.	Locality.	Kind of work.	Unit or area.	Year.	Locality.	Kind of work.	Unit of area.	Cost.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

I. Works prescribed.
II. Works suggested.
III. Works neither prescribed nor suggested.

FORM XIII.

Control Journal (combined for all working circles in both districts).

1 General—	
(*a*) Casuarina Conversion Working Circle.	Brief notes in narrative form regarding the suitablity of areas allotted to each circle, work done during the year, arrears.
(*b*) Fuel Plantation Working Circle.	
(*c*) Manure Leaf Working Circle ..	
(*d*) Grazing Working Circle	
(*e*) Minor Forest Produce Working Circle.	
(*f*) Protection Working Circle ..	
(*g*) Miscellaneous	
2 Regeneration—	
(*a*) Natural seedlings regeneration ..	Observations on important fuel species including mangrove species.
(*b*) Coppice regrowth in felled coupes.	...
(*c*) Seed	Seed years, method of collection and storage seasons, sources retreatments, etc.
(*d*) Nursery	Nursery technique for important species.
(*e*) Clearfelling, burning and preparation of area.	General comments.
(*f*) Planting and sowing methods ..	Do.
(*g*) Weeding, soil working and pruning.	Do.
(*h*) Watering casuarina plants ..	Remarks on quantity and frequency of watering.
(*i*) Dry technique of raising casuarina.	Observations on success of raising casuarina without watering.
(*j*) Kumri regeneration	Kinds of field crops, their influences on seedlings, obligations of kumridars, earnest money deposits, etc.
3 Transport	Rates, seasons, routes in respect of bullock carts, motor lorries and water transport through canals.
4 Market conditions	Brief notes on prices of casuarina and other jungle wood fuel in Madras, Chingleput, Tindivanam, Villupuram and Tirukkoilur and other centres.
5 Roads	General—Costs—Suggestions.
6 Buildings	Do.
7 Boundaries	Maintenance—Cost—Checking and verification—Compilation of Register of Reserved Forests.
8 Injuries to the crop—	
(*a*) Fires	....
(*b*) Offences	....
(*c*) Insects	....
(*d*) Climates and their factors ..	....
9 Rainfall and climate	Brief notes for the division as a whole; statements of rainfall for all important Revenue stations for the Forest Raingauge stations.
10 Staff	Changes in strength of staff; possible lines of reduction of staff.
11 Labour	Daily rates of wages for men, women and boy coolies; outturn of work per day, for labour on artificial regerneration works, compilation of forest schedule of rates for artificial regeneration works.
12 Contractors	List of standing contractors, their reliability and their good and bad works.
13 Camps	....
14 Shooting and fishing	Preservation of game.
15 Inspection notes on reserved forests.	Complete file to be maintained.
16 Health	Brief notes with special reference to Elephantiasis.
17 Experiments and research ..	Full details of observations and conclusions of experiments carried in the district, as also results of experiments of Provincial Silviculturist, where they are applicable, to works in this division.
18 Miscellaneous	....
19 Financial results	Furnish financial statement for the year with suggestions for augmenting Revenue and reducing Expenditure, so as to make the division self-supporting.

APPENDIX IV—*cont.*

FORM XIV.

Deviation Statement (for the division as a whole).

Serial number.	Control form and page reference.	Reference to working plan. Paragraphs.	Reference to working plan. Prescription.	Nature of division.	Authority sanctioning the deviation.
(1)	(2)	(3)	(4)	(5)	(6)

FORM XV.

Financial Statement (for each Revenue district separately).

Working Circle.	Revenue.			Expenditure.		
	Working Plan Forecast.	Actuals.	Remarks.	Working Plan Forecast.	Actuals.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)

APPENDIX V.

List of Working Plan Maps.

The following maps accompany the Working Plan :—

(i) One set of three tracing cloth maps for Chingleput, Sriperumbudur and Tirupporur ranges.

(ii) One set of four tracing cloth maps for Markanam and Thirukkoilur ranges.

(iii) One set of 23 tracing cloth maps for Reserved Forests of South Arcot district now under Panchayat Management.

(iv) One set of key maps for the division consisting of seven tracing cloth maps for the whole division.

Proceedings of the Chief Conservator of Forests

Proceedings Ms. No. 68, 5th February 1953

Working Plan—Chingleput Division—Sanctioned.

M. Kesavan Unni Nayar, I.F.S.,
Chief Conservator of Forests.

Proceedings—Ms. No. 68, dated 5th February 1953.

Sanctioned subject to amendments issued after the preparation of the Working Plan.

M. Kesavan Unni Nayar,
Chief Conservator of Forests.

(True copy

Personal Assistant.

To the Conservator, Working Plans Circle.
" Conservator, Salem Circle.
" District Forest Officer, Chingleput.

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